



*21 September University of
Medical and Applied Sciences*

Faculty of Medicine

Bachelor of Medicine and

Bachelor of Surgery

(MBBS)

Program Specification

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1.Preface:

The 21 Sep. university is established according to the Yemeni Republican decree (order No.161) Year 2016, as a **Governmental University** .

This comes as a result to shortage in number of universities and high number of secondary graduates who did not find opportunity to get their right in high education in the country.

The faculty of medicine is one of the main faculties in the university, as the current statistics show that the doctor - to - potential patients ratio is still very low in Yemen. Therefore, there is a need to train more and more doctors. Moreover, the majority of the few doctors available serve the minority of the Yemeni community living in urban areas while the minority of qualified doctors is the ones that serve the majority of the community living in rural areas.

Community – Based Medical Education may contribute significantly to the process of this reversal. The philosophy of the medical program is to train Doctors who are conversant with the health problems of the communities they will serve; and who have knowledge, skills and above, all appropriate attitudes that will make them sufficiently competent to run the health services so as to achieve health for all in the next few decades.

Every attempt is to be made to encourage students to participate in group discussions and seminars to enable them to develop personality, character, expression and other facilities which are necessary for a medical graduate to function either in solo practice or as a team leader when he begins his independent career. A discussion group should not have more than 20 students.

Faculty members should avail of modern educational technology while teaching the students and to attain this objective, Medical Education Units/ Departments should be established in all medical colleges for faculty development and providing learning resource material to teachers.

By looking at the curriculum of a subject, one can judge the state of intellectual development and the state of progress of a nation. The world has turned into a global village, new ideas and information are pouring in a constant stream. It is, therefore, imperative to update our curricula by introducing the recent developments in the relevant fields of knowledge.

2-Vision, Mission and aim

2-1 Vision:

Excellency in medical education and development of medical care Services in Yemen.

2-2 Mission:

The faculty of medicine is striving to provide the community with a well-qualified graduates who respond effectively to health needs and challenges , capable of continuous self-learning, scientific researches and able to interact with local and international medical communities.

2-3 Program Aims:

The overall aims of the program are to provide the graduate with:

2.3.1. Basic scientific knowledge essential to practice medicine at the primary health care and different specialties of medicine, with proper awareness of the social and community prosperities.

2.3.2. Clinical, practical and administrative skills essential for proper evaluation and management of the common health problems.

2.3.3. Basic ethical, professional and communication skills essential for establishing & maintaining good doctor/ patient relationship, appropriate attitudes with colleagues and para-medicals.

2.3.4. Life long learning competencies necessary for continuous professional development including self learning and principles of medical research.

2-4 Values:

- a) Ethics.
- b) Loyalty.
- c) Transparency.
- d) Work in the spirit of one family.

3-Intended Learning Outcomes (ILOs):

3.1. Knowledge and Understanding:

By the end of the program the graduates should be able to:

A1-Describe the normal structure and function of human body.

A2-Describe molecular, biochemical and cellular mechanism needed in maintaining Homeostasis

A3-Identify the developmental changes in humans

A4- Describe basics of normal and abnormal human behaviors.

A5-Identify altered structure and function of humans in various diseases and conditions in relation to gender and age.

A6-Describe the common diseases and life-threatening conditions as regards etiology, Pathogenesis, clinical features, differential diagnosis and complications throughout the different age groups.

A7- Define the principles of management for common diseases and life-threatening Conditions including pharmacological basis of drugs, non-invasive and invasive interventions, basic pre- and post-operative care, pain relief and palliative care.

A8-Describe the role of genetics in health and disease

A9-Identify the determinants of health, principles of health promotion, disease prevention, early detection and control of common community health problems including disease surveillance and screening.

3.2. Intellectual Skills:

By the end of the program the graduate should be able to:

- B1- Integrate basic structural, biochemical and physiological facts with clinical data.
- B2- Correlate structural, functional, biochemical and immunological alterations of common pathological conditions and diseases with clinical data and therapy.
- B3- Formulate a management plan for diseases and emergencies
- B4- Interpret the results of diagnostic procedures.
- B5- Select appropriate tests for the diagnosis of diseases
- B6- Prioritize the medical problems and their differential diagnoses
- B7- Classify factors that place individuals at risk for disease or injury.
- B8- Use evidence based medicine principles to integrate the data obtained by History taking, physical examination and investigations into a meaningful answerable clinical formula allowing the student to manage patients' problems using the best available evidence derived from literature (information technologies and library resources).
- B9- Design preventive Strategy for common community problems.

3.3. Practical and Clinical Skills:

By the end of the program the graduate should be able to:

- C1- Demonstrate basic sciences' practical skills relevant to the future practice and acquire practical, clinical skills and competencies
- C2- Take and record a structured patient-centered history.
- C3- Perform full physical examination appropriate to age and gender in acute and chronic Clinical conditions.
- C4- Assess the mental state of the patient.
- C5- Construct appropriate management strategies both diagnostic and therapeutic for patients with common acute and chronic diseases including medical, psychiatric and surgical conditions.
- C6- Provide first aid measures for injured and critically-ill patients.
- C7- Work out drug dosage based on patient's criteria and health condition.
- C8- Write safe prescriptions of different types of drugs.
- C9- Conduct community diagnosis for priority setting of community health problems.

3.6. General and Transferable Skills:

By the end of the program, the graduate will be able to:

- D1- Adopt the principles of lifelong learning needs of the medical profession (continuous Professional development; CPD).
- D2- Use computers efficiently in reaching biomedical information to remain current with advances in knowledge and practice.
- D3- Present information clearly in written, electronic and verbal forms
- D4- Communicate ideas and arguments effectively
- D5- Work effectively within a multidisciplinary team

D6- Manage time and resources effectively and set priorities

D7- Apply simple statistical methods.

D8- Apply English language as needed for appropriate learning and communication in relation To medicine.

4- Academic Standards:

4.1. The national academic reference standards (YAC& QA)

4.2. Comparison of program aims and ILOs to the international academic reference standards (IRS)

for medicine:

4.3. The aims and ILOs of the program cover the national academic reference standards in medicine,

as well as Benchmarks Jordan, Malaysia and Egypt standards

5 - Program structure and contents:

The faculty offer easy match of the lectures ,clinical training and PBL methods by integrated organ system based blocks program.

The M.B.B.S. degree is awarded from the Faculty of Medicine in 21 September University of Medical and Applied Sciences only after the successful completion of the 230.5 required credit hours set by the University and distributed as shown in Table (3), and after the fulfillment of the following requirements:

Fulfilling all provisions required by the University regulations concerning awarding Bachelor degree in Medicine and Surgery from 21 September University of Medical and Applied Sciences. This study plan will be applied on all accepted students as of the academic year 2016-2017.

The distribution of courses and credit hours for being eligible to be awarded the M.B.B.S. degree will be as follows:

University requirements: (28) credit hours which include will be studied by all university students as in table (1).

Table 1

Code #	Subject / Course	Credit Hours	Number of weekly contact hours		Pre-requisite
			Theo.	Pract.	
ARB111	Arabic Language	3	3	-	
CHM112	Chemistry	3	3	-	-
COM 113	Introduction to Computer Science	3	3	-	
ENG114	English Language	2		4	
ETH115	Medical ethics	2	2		
ISL116	Islamic culture	2	2		

NUR117	Fundamental of nursing	3	2	2	
PHY 118	MEDICAL PHYSICS	3	2	2	
TER119	Medical terminology	1	1		
COU125	Communication skills	2	2		
INT126	Information technology	2	2		
NUT127	General nutrition	2	2		
	Total Credits	28			

The Faculty of Medicine core course: (202.5) credit hours distributed as shown in table (2):

Table 2

Code #	Subject/Course	Cr.hrs.	Theory	Practical	Weekly Clinical Training
Med121	General Anatomy	3	2	2	-
Med 122	General Biochemistry	4	3	2	-
Med 123	General Histology	3	2	2	-
Med 124	General Physiology	3	3	-	-
Med 211	General Microbiology	5	4	2	-
Med 212	General Parasitology	5	4	2	-
Med 213	General Pathology	6	4	4	-
Med 214	General Pharmacology	5	4	2	-
Med 215	Community medicine I	2.5	2	1	
Med 221	Cardio-vascular system	6	4	4	-
Med 222	Haemopoietic& Lymphatic system	6	4	4	-
Med 223	Respiratory system	6	4	4	-
Med 311	Endocrine system	6	4	4	-
Med 312	Gastro-intestinal system	6	4	4	-
Med 313	Muscular-Skeletal system	6	4	4	-
Med 321	Community medicine II	2.5	2	1	
Med 322	Genitors-Urinary system	8	6	4	-
Med 323,a	Neuroscience 1	4	3	2	-
Med323,B	Neuroscience 2	4	3	2	
Med 411	Clinical Psychology (Behavioral Science)	3	3	-	
Med 412	General Surgery 1	9	-	-	8

Med 421	General Medicine 1	9	-	-	8
Med 422	Pediatrics 1	9	-	-	8
Med 423	Community medicine III	2.5	2	1	
Med 511	Obstetrics & Gynecology 1	9	-	-	8
Med512	Research methodology & Biostatistics	2.5	2	1	
Med 513	Psychiatry	4.5	-	-	4
Med 521	Anesthesia	2.25	-	-	2
Med 522	Dermatology	2.25	-	-	2
Med 523	Ear, Nose & Throat	2.25	-	-	2
Med 524	Forensic Medicine & Toxicology	2.25	-	-	2
Med 525	Neurology	2.25	-	-	2
Med 526	Orthopedics	2.25	-	-	2
Med 527	Ophthalmology	2.25	-	-	2
Med 528	Diagnostic Radiology	2.25	-	-	2
Med 611	General Medicine 2	9	-	-	8
Med 612	General Surgery 2	9	-	-	8
Med 613	Pediatrics 2	9	-	-	8
Med 621	Obstetrics & Gynecology 2	9	-	-	8
Med 620	Elective	9	-	-	8
	Total	202.5			

The following table (3) shows the distribution of graduation requirements for Medical students:

Table 3

Requirement	CRDIT HOURS
University & Faculty Requirements	28
Core Course	202.5
Total	230.5

The study plan for being awarded the Bachelor degree in Medicine and Surgery

Guide-line Tables

First year:

Semester 1

CODE	Subject/Course	Cr. hrs.	Theory	Practical	Weekly Clinical Training
ARB111	Arabic Language	3	3	-	
ISL116	Islamic culture	2	2		
ENG114	English Language	2	-	4	
CHM112	Chemistry	3	3	-	
PHY118	MEDICAL PHYSICS	3	2	2	
NUR117	Fundamentals of nursing	3	2	2	
ETH115	Medical ethics	2	2		
TER119	MEDICAL TERMINOLGY	1	1		
COM113	Introduction to Computer Science	3	3	-	
	Total	22			

Semester 2

COU125	Communication Skills	2	2	-	
NUT127	General Nutrition	2	2	-	
MED121	General Anatomy	3	2	2	
MED123	General Histology	3	2	2	
MED124	General Physiology	3	3	-	
MED122	General Biochemistry	4	3	2	
INT126	Information Technology	2	2		
	Total	19			

Second year:

Semester 1:

MED212	Parasitology	5	4	2	
MED213	General Pathology	6	4	2	-
MED214	General Pharmacology	5	4	2	-
MED211	General Microbiology	5	4	2	-
MED215	Community Medicine I	2.5	2	1.5	
	Total	23	20	9	

Semester 2:

MED221	Cardio-vascular system	6	4	4	-
MED222	Haemopoietic & Lymphatic system	6	4	4	-
MED223	Respiratory system	6	4	4	-
	Total	18			

Third year:**Semester 1:**

MED312	Gastro-intestinal system	6	4	4	-
MED311	Endocrine system	6	5	2	-
MED313	Muscular-skeletal system	6	4	4	-
	Total	18			

Semester 2:

Med 323.A	Neuroscience 1	4	3	2	-
MED 323.B	Neuroscience 2	4	3	2	-
MED 322	Genito-Urinary system	8	6	4	-
MED 321	Community Medicine II	2.5	2	0.5	-
	Total	18.5			

Fourth year:**Semester 1:**

MED 411	Clinical Psychology (Behavioral Science)	3	3	-	
Med 412	General Surgery (1)	9	-	-	10

Semester 2:

Med 421	General Medicine (1)	9	-	-	10
Med 422	Pediatrics (1)	9	-	-	10
Med 423	Community Medicine III	2.5			2.5
Total		32.5			

Fifth year:**Semester 1:**

Med 511	Obstetrics & Gynecology 1	9	-	-	8
Med 512	STATISTICS	2.5	-	-	4
Med 513	Psychiatry	4.5	-	-	4

Semester 2:

Med 513	Ear, Nose & Throat	2.25	-	-	2
Med 516	Orthopedics	2.25	-	-	2
Med 511	Anesthesia	2.25	-	-	2
Med 515	Neurology	2.25	-	-	2
Med 517	Ophthalmology	2.25	-	-	2
Med 512	Dermatology	2.25	-	-	2
Med 518	Diagnostic Radiology	2.25	-	-	2
Med 514	Forensic Medicine & Toxicology	2.25	-	-	2
	Total	34			

Sixth Year:**Semester 1:**

Med 612	General Surgery (2)	9	-	-	8
Med 611	General Medicine (2)	9	-	-	8
Med 613	Pediatrics (2)	9	-	-	8

Semester 2:

Med 621	Obstetrics and Gynecology (2)	9	-	-	8
Med 620	Elective	9	-	-	8
	Total	45			



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Human Anatomy and Embryology**

**Course Name: General Anatomy
Code: MED121**

A) Basic Information

1. **Course title:** Introduction to Anatomy & Embryology.
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** Human Anatomy and Embryology
4. **Academic year:** second semester first year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:** Prof. Dr. -----
7. **Allocated marks:** 150 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	2 credit hrs=30 hrs
2- Practical	1 credit hrs=30 hrs

B) Professional Information:

1- Overall Aim of the Course: this course aims to:

1. To have a sound knowledge of the basic human body structure, with a general overview of body systems to comprehend the Medical profession.
2. To have a sound basic knowledge of the general human development and major birth defects and abnormalities.

2- Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

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

- 2.1.1. **Define** different general anatomical and embryological terminology.
- 2.1.2. **Explain** the basic principles of structure of different tissues, organs and systems of the human body.
- 2.1.3. **Describe** the surface landmarks of the underlying bones, muscles, tendons and internal structures (nerves, vessel & viscera) and describe the basic structures of upper limb (bones, muscles, nerves, vessels and joints).
- 2.1.4. **Summarize** the different stages of the human development and growth
- 2.1.5. **State** major clinical applications of anatomical facts.

2.2. Practical and Clinical Skills

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

- 1.2.1. **Identify** different parts of human body.
- 1.2.2. **Apply** the anatomical facts of upper limb while examining the living subject in order to reach a proper diagnosis.
- 1.2.3. **Identify** the different surface markings and determine the position or course of the internal structures.
- 2.2.4. **Identify** the different internal structures in specimen's faculty of Medicine, 21 Sep. University.
- 1.2.4. **Demonstrate** the different surface markings and determine the position or course of the internal structures.

2.3. Communication skills:

By the end of the program, the graduate will be able to:

- 2.3.1. **Communicate** clearly, sensitively and effectively with patients and their relatives and colleagues from a variety of health and social care professions.
- 2.3.2. **Establish good relations** with other health care professionals
Regardless of their degree or rank (top management, subordinate or colleague).
- 2.3.3. **C o m m u n i c a t e** effectively with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.

2.4. Intellectual Skills:

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

- 2.4.1 **Relate** some clinical findings in relation to developmental basis.
- 2.4.2 **Interpret** the normal anatomical structures on x-ray
- 2.4.3 **Analyze** the relation between the knowledge of internal structure and reach to professional diagnosis.

2.5. General and transferable Skills:

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

- 2.5.1. **Present** data in an organized and informative manner.
- 2.5.2. **Establish** appropriate professional attitudes and behaviors in different practice situations.
- 2.5.3. **Establish** life-long self-learning required for continuous professional development.
- 2.5.4. **Use** the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.
- 2.5.5. **Retrieve**, manage, and manipulate information by all means, including electronic means.
- 2.5.6. **Present** information clearly in written, electronic and oral forms.
- 2.5.7. **Establish** effective interpersonal relationship to Communicate ideas and arguments.

3- Coursecontents:

Week 1

	T.H	P.H	TOTAL
Introduction to the course. 1. Define human anatomy with its subdivisions. 2. Define structural levels of organization. 3. Medical terminology.	1	1	2
Introduction to the course. 1. Anatomical position. 2. Anatomical planes. 3. Directional terms used in studying the human body. 4. The principles employed in studying the human body	1	1	2

Week 2

Skeletal system 1. Types of bones. 2. Major bony landmarks. 3. Classification of bones. 4. Naming of individual bones and their major characteristics.	1	1	2
Axial skeleton 1. The skull, overview. 2. Different approaches to the study of the skull 3. Cranial and facial bones with their main feature. 4. Major foramina in cranial fossae.-	1	1	2

Week 3

Appendicular skeleton. 1. Shoulder girdle and bones of the upper limb main feature of each bone. 2. Pelvic girdle and bones of the lower limb main features of each bone	1	1	2
Articulations. 1. Types and classification of joints 2. Types of synovial joints 3. Brief description of, shoulder.hip.and knee joints	1	1	2

Week 4

Muscular System I 1. Definition of muscles and movement. 2. Major muscles of the head and neck regions. 3. Expression,mastication,cervical muscles moving the skull.	1	1	2
Muscular System II 1. Muscles of the trunk.shoulder muscles,pectoral region, thoracic wall,abdominal wall.gluteal region.	1	1	2

Week 5

Muscular System III. 1. Muscles of the arm and, forearm. 2. Muscles of the thigh and leg	1	1	2
Cardiovascular System I. 1. The heart and pericardium. 2. The great vessels associated with the heart 3. Systemic and pulmonary circulation	1	1	2

Week 6

Cardiovascular System II. 1. Bvs of the head and neck. 2. Bvs of the thoracic, and abdominal aorta. 3. Bvs of the upper limb. 4. Bvs of the lower limb.	1	1	2
Respiratory System . 1. Upper respiratory tract organs. 2. Conductive regions. nose, nasopharynx, larynx , trachea and bronchial tree.	1	1	2

Week 7

Digestive System I. 1. Divisions of the GIT 2. Oral cavity and pharynx 3. Oesophagus and stomach.	1	1	2
Digestive System II. 1. The intestinal tract. 2. Rectum and anal canal. 3. Liver, pancreas and spleen.	1	1	2

Week 8

Urinary System. 1. Gross anatomy of the kidney. 2. ureter. 3. urinary bladder. 4. Urethra.	1	1	2
Male reproductive System. 1. Male reproductive organs. 2. Male genital organs.	1	1	2

Week 9

Female reproductive System. 1. Female reproductive organs, ovary, uterus 2. Female genital organs.	1	1	2
Nervous System I. 1. Overview of the CNS & PNS 2. Topography of the brain and spinal cord. 3. Meninges	1	1	2

Week 10

Nervous System II. 1. cranial nerves. 2. spinal nerves. 3. plexuses summary of, brachial and lumbosacral	1	1	2
Gametogenesis. 1. definition of gametes. somatic and sex cells. 2. male and female gametes. 3. principles of reproduction. 4. spermatogenesis and oogenesis.	1	1	2

Week 11

First week of development 1. fertilisation., morula and blastula formation. 2. implantation, 3. The endometrium.	1	1	2
2nd week of development. 1. Major events in this week. 2. Formation of bilaminar germ disc. 3. Yolk sac, amnion, chorion.	1	1	2

Week 12

3rd week of development. 1. major events in this week 2. formation of trilaminar germ disc. 3. major derivatives of the germ layers.	1	1	2
Embryonic period. 1. Major events occurring during the period from week 3-8.	1	1	2

Week 13

Fetal period. 1. Major events occurring during this period, until birth. 2. Divisions of pregnancy into 3 semesters. 3. following and measuring the normal fetal growth. 4. normal birth	1	1	2
Fetal membranes & placenta. 1. formation of the normal placenta. 2. formation of fetal membranes	1	1	2

Week 14

Birth defects 1- major cause of congenital anomalies leading to birth defects. with concentration on environmental preventable factors.	2	2	4
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Week 15

Practical exam week

4-Teachingandlearningmethods:

METHODS USED:

- Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- Lectures and/or handouts - are not to replace the main source of information that is the textbook.
- Labs are group activities where:
A-Students prepare lists of structures to be identified.
B-Supervised identification will be carried out.
C-Group discussions are very much encouraged.

TEACHINGPLAN:

- Lectures: 29lectures
- Smallclasses: 29practicalclasses

Time plan:

Item	Timeschedule	Teaching hours
Lectures	2 times/week/15weeks (2 C. hours/week)	30hours
Practicalclasses	2 hours /week/ 15week (1 C. hours/week)	30 hours
Total	3 C.hours /week/15 week	60hours

5- StudentsAssessmentmethods:

5-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1 st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) WeightingSystem:

Examination	Marksallocated
3- Finalexam:	
a- Written	100
b- Practical	50
Total	150

5-D) Examinationdescription:

Examination	Description
Finalexam: a- Written b- Practical	<input type="checkbox"/> select(MCQs),Shortessay,cases,complete, crossmatching <input type="checkbox"/> spotidentification

6-Listofreferences:

6.1- Department books:

Snell's anatomy

6.2- Essentialbooks(textbook):

Last's Anatomy(2012) :Chummy, S.S.: Regional and applied. Pub.Churchill Livingstone, Edinburgh, London, New York. 10th edition.

6.3-Recommendedbooks:

Gray's Anatomy for Student (2012): a standard text book by Richard L.Dark,A.Wayne Vogol and Adam W.M.Michel ,2nd Edition

Last's Anatomy(2012):Chummy, S.S.:Regional and applied. Pub. Churchill

Livingstone,Edinburgh,London,NewYork. 10th ed

Sadler T.W,(2008) : Langman's Medical Embryology, 11th ed., Lippincott Williams&Wilkins

6.4- Periodicals,Websites,etc:

- <http://www.anatomy.com>

-<http://www.medscape.com>.

-<http://www.pubmed.com>.

- <http://sciencedirect.com>.

7- Facilities requiredforteachingandlearning:

Facilities usedfor teachingthiscourseinclude:

-Faculty lectureshalls:

-Departmentlectureshalls:

- Audio-visual teachingequipment (Computer,datashow,)

- Modelsandmannequins

- Datashow,scientificpictures archives.

-Radiologycollections &archive

Coursecoordinator: Prof.Dr./

HeadofDepartment:Prof.Dr./



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Biochemistry**

**Course Name: General Biochemistry
Code: MED122**

A. Basic Information:

1. **Course title:** General biochemistry.
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** biochemistry Department
4. **Academic year:** second semester of first year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:** Prof. Dr. -----
7. **Allocated marks:** 200 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	3 credit hrs=45 hrs
2- Practical	1 credit = 30 hr

B) Professional Information:

1. Overall Aim of the Course: this course aims to:

1. To enable the student to be oriented with the biochemical importance of some macro- and micronutrients.
2. To enable the student to illustrate and/or describe the metabolic pathways of some macronutrients and nucleotides.
3. To enable the students to point-out some hereditary and acquired metabolic disturbances and their biochemical laboratory and clinical outcomes.
4. To enable the student to describe major body fluids composition and their clinical impact.
5. To enable the student to interpret medical laboratory Reports

2- Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

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

- 1- **Describe** the relationship between protein structure and its biological function.
- 2- **Describe** the generation and storage of metabolic energy.
- 3- **Illustrate** main metabolic pathways and their key steps.
- 4- **Define** the role of phospholipids in determining the properties of biological membranes and their function.

2.2. Communication skills:

By the end of the program, the graduate will be able to:

- 2.2.1. **Communicate** clearly, sensitively and effectively with patients and their relatives, and colleagues from a variety of health and social care professions.
- 2.2.2. **Establish good relations** with other health care professionals regardless of their degree or rank (top management, subordinate or colleague).
- 2.2.3. **Communicate effectively** with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.

2.3. Intellectual Skills:

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

- 2.3.1. **Correlate** biochemical alterations with clinical data to reach etiology, diagnosis and treatment.
- 2.3.2. **Interpret** symptoms, signs and biochemical laboratory findings of some metabolic disorders.
- 2.3.3. **Analyze** and evaluate laboratory results and use them in diagnosis of diseases.
- 2.3.4. **assess** the clinical significance of determination of plasma levels of glucose, total proteins, creatinine and uric acid.

2.4. General and transferable Skills:

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

- 2.4.1. **Present** data in an organized and informative manner.
- 2.4.2. **Establish** appropriate professional attitudes and behaviors in different practice situations.
- 2.4.3. **Establish** life-long self-learning required for continuous professional development.
- 2.4.4. **Use** the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.
- 2.4.5. **Retrieve**, manage, and manipulate information by all means, including electronic means.
- 2.4.6. **Present** information clearly in written, electronic and oral forms.
- 2.4.7. **Establish** effective interpersonal relationship to communicate ideas and arguments.

2.5. Practical and Clinical Skills

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

- 2.5.1. Identify lab instruments, apparatuses and glass wares and their uses in practice.
- 2.5.2. Practice basics of safety in the laboratory.
- 2.5.3. Apply different methods of pH determination.
- 2.5.4. determine physical properties of CHO.
- 2.5.5. Perform specific chemical tests to identify different sugars.
- 2.5.6. Determine physical properties of different proteins.
- 2.5.7. Write a Comment on results of DNA electrophoresis
- 2.5.8. Apply the principles of Colorimetry.
- 2.5.9. Estimate serum levels of glucose, total proteins, creatinine and uric acid by colorimetric methods.
- 2.5.10. write a comment on the results of these estimations.

3- Course contents:

week	Topic	
1	Water: The Solvent for Biochemical reactions	<ul style="list-style-type: none">• What makes water a polar molecule?• What is a hydrogen bond?• What are acids and bases?• What is pH, and what does it have to do with the properties of water?• What are titration curves?• What are buffers, and why are they important?

2	Amino Acids and Peptides	<ul style="list-style-type: none"> • What are amino acids, and what is their three-dimensional structure? • What are the structures and properties of the individual amino acids? • Do amino acids have specific acid-base properties? • What is the peptide bond? • Are small peptides physiologically active?
3	The Three-Dimensional Structure of Proteins	<ul style="list-style-type: none"> • How does the structure of proteins determine their function? • What is the primary structure of proteins? • What is the secondary structure of proteins? • What can we say about the thermodynamics of protein folding? • What is the tertiary structure of proteins? (Denaturation and refolding) • Can we predict protein folding from sequence? • What is the quaternary structure of proteins?
4	The Behavior of Proteins: Enzymes	<ul style="list-style-type: none"> • What makes enzymes such effective biological catalysts? • What is the difference between the kinetic and the thermodynamic aspects of reactions? • How can we describe enzyme kinetics in mathematical terms? • How do substrates bind to enzymes? • What are some examples of enzyme catalyzed reactions? • What is the Michaelis-Menten approach to enzyme kinetics? • How do enzymatic reactions respond to inhibitors?
5	The Behavior of Proteins: Enzymes, Mechanisms, and Control	<ul style="list-style-type: none"> • Does the Michaelis-Menten model describe the behavior of allosteric enzymes? • What are the models for the behavior of allosteric enzymes? (Concerted Model) • How does phosphorylation of specific residues regulate enzyme activity? • What are zymogens, and how do they control enzyme activity? • How do active-site events of an enzyme affect the reaction mechanism? (The Mechanism of Chymotrypsin Action) • What types of chemical reactions are involved in enzyme mechanisms? • What are coenzymes?
6	Lipids and Proteins are Associated in Biological Membranes	<ul style="list-style-type: none"> • What is the definition of a lipid? • What are the chemical natures of the lipid types? • What is the nature of biological membranes? • What are some common types of membrane proteins? • What is the Fluid-Mosaic model of membrane structure? • What are some of the functions of membranes? • What are the lipid-soluble vitamins, and what are their functions? • What are prostaglandins and leukotrienes, and what do they have to do with lipids?
7	The Importance of Energy Changes and Electron Transfer in Metabolism	<ul style="list-style-type: none"> • What are standard states for free-energy changes? • What is a modified standard state for biochemical applications? • What is metabolism? • How are oxidation and reduction involved in metabolism? • How are coenzymes used in biologically important oxidation-reduction reactions? • How are production and use of energy coupled? • How is coenzyme A involved in activation of metabolic pathway?

8	Carbohydrates	<ul style="list-style-type: none"> • What are the structures and the stereochemistry of monosaccharides? • How do monosaccharides react? (The formation of glycosides) • What are some important oligosaccharides? • What are the structures and functions of polysaccharides? • What are glycoproteins?
9	Glycolysis	<ul style="list-style-type: none"> • What is the overall pathway in glycolysis? • How is the 6-carbon glucose converted to the 3-carbon glyceraldehyde-3-phosphate? • How is glyceraldehyde-3-phosphate converted to pyruvate? • How is pyruvate metabolized anaerobically? • How much energy can be produced by glycolysis?
10	Storage Mechanisms and Control in Carbohydrate Metabolism	<ul style="list-style-type: none"> • How is glycogen produced and degraded? • How does gluconeogenesis produce glucose from pyruvate? • How is carbohydrate metabolism controlled? • Why is glucose sometimes diverted through the pentose phosphate pathway?
11	The Citric Acid Cycle	<ul style="list-style-type: none"> • What role does the citric acid cycle play in metabolism? • What is the overall pathway of the citric acid cycle? • How is pyruvate converted to acetyl-CoA? • What are the individual reactions of the citric acid cycle? • What are the energetics of the citric acid cycle, and how is it regulated? • What is the glyoxylate cycle?
12	Electron Transport and Oxidative Phosphorylation	<ul style="list-style-type: none"> • What role does electron transport play in metabolism? • What are the reduction potentials for the electron transport chain? • How are the electron transport complexes organized? • What is the connection between electron transport and phosphorylation (Chemiosmotic Coupling)? • What is the mechanism of coupling in oxidative phosphorylation? • How are respiratory inhibitors used to study electron transport? • What is the ATP yield from complete oxidation of glucose?
13	Lipid Metabolism	<ul style="list-style-type: none"> • How are lipids involved in the generation and storage of energy? • How are lipids catabolized? • What is the energy yield from the oxidation of fatty acids? • How are unsaturated fatty acids and odd-carbon fatty acids catabolized? • What are ketone bodies? • How are fatty acids produced? (Brief pathway) • How is cholesterol produced?
14	The Metabolism of Nitrogen	<ul style="list-style-type: none"> • What processes constitute nitrogen metabolism? • How is nitrogen incorporated into biologically useful compounds? • How are amino acids synthesized? • What are the essential amino acids? • How are amino acids catabolized?
15	Nucleic Acids: How Structure Conveys Information	<ul style="list-style-type: none"> • What are the levels of structure in nucleic acids? • What is the covalent structure of polynucleotides? • What is the structure of DNA?
16	Integration of Metabolism: Cellular signaling	<ul style="list-style-type: none"> • Describe hormones and second messengers? • How are hormones involved in the control of metabolism? • What are the many effects of insulin?

4-Teachingandlearningmethods:

METHODS USED:

- 1- Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- 2- Lectures and/or handouts - are not to replace the main source of information that is the textbook.
- 3- Labs are group activities where:
 - A-Students prepare lists of structures to be identified.
 - B-Supervised identification will be carried out.
 - C-Group discussions are very much encouraged.

TEACHINGPLAN:

Lectures: 45 lectures

Practical: 30 hours

Time plan:

Item	Timeschedule	Teaching hours
Lectures	3times/week/15weeks (3C. hours/week)	45hours
Practicalclasses	1 times/week/ 15week (1 C. hours/week)	30 hours
Total	4 C. hours /week/15 week	75 hours

5- StudentsAssessmentmethods:

5-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) WeightingSystem:

Examination	Marksallocated
3- Finalexam:	
a-Written	150
b- Practical	50
Total	200

5-D) Examinationdescription:

Examination	Description
Finalexam: a- Written b- Practical	<input type="checkbox"/> select(MCQs),Shortessay,cases,complete, crossmatching

6-Listofreferences:

6.1 Textbook:

M.K. Campbell and S. O. Farrell (2006), **BIOCHEMISTRY**, 5th Edition. Publisher: Thomson Learning, Inc., USA

6.2 Periodicals, Web sites, etc:

- <http://www.medscape.com>.
- <http://www.pubmed.com>.
- <http://sciencedirect.com>.

7- Facilities required for teaching and learning:

Facilities used for teaching this course include:

- Faculty lectureshalls:
- Departmentlectureshalls:
- Audio-visual teachingequipment (Computer,datashow,)
- Modelsandmannequins
- Datashow,scientificpictures archives.
- Radiologycollections &archive

Course coordinator: Prof. Dr./



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Histology

Course Name: General Histology
Code: MED 123

A. Basic Information:

1. **Course title:** Histology
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** Histology
4. **Academic year:** first semester of second year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:** Prof. Dr. -----
7. **Allocated marks:** 150 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	2 credit hrs.=30 hrs.
2- Practical	1 credit = 30 hrs.

B) Professional Information:

1- Overall Aim of the Course:

- 1.1. To provide a scientific knowledge of the normal structure of the human body & tissue cells at the level of molecular & cellular biology.
- 1.2. To provide appropriate practical skills for tissue processing to prepare histological slides.
- 1.3. To enable the student to know basics of cytogenetics and cell biology.
- 1.4. To enable the student to correlate between histological structure and functions of various tissue and organs.

2- Intended Learning Outcomes (ILOs):

2.a. Knowledge and understanding:

By the end of the course, students should be able

- 2.a.1. **Define** different general histological terminology.
- 2.a.2. **Describe** the basic principles of structure of different body cells.
- 2.a.3. **State** the basic principles of cell cycles and basics of cytogenetic.
- 2.a.4. **Outline** major clinical applications of cytogenetic diseases.
- 2.a.5. **Describe** the basic principles of histo-chemistry
- 2.a.6. **Summarize** basic structure of epithelium, C.T., blood, cartilage, bone.
- 2.a.7. **Describe** the clinical correlations with histological issues.

2.b. Practical and Clinical Skills

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

2. b.1. **Identify** different histological micrographs especially for E/M.
2. b.2. **Write** comment on some clinical correlations in histological basis.
2. b.3. **Apply** the Histological facts while examining the slides in order to reach a proper diagnosis

2.c. Professional Attitude and Behavioral skills:

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

- 2.c.1. **Demonstrate** Respect for college's right & involve them in caretakers in management decisions.
- 2.c.2. **Demonstrate** Respect to all colleges irrespective of their socioeconomic level, culture
- 2.c.3. **Demonstrate** Respect for right researches' and involve them and/or their in management decisions.
- 2.c.4. **Respect** the role and the contributions of other health care professionals regardless their degrees or rank (top management, subordinate or colleague).
- 2.c.5. **Reflect** critically on their own performance & that of others.

2.d. Communication skills:

By the end of the program the graduate will be able to:

- 2.d.1. **Communicate** clearly, sensitively and effectively with their colleagues.
- 2.d.2. Establish good relation with other health care professionals regardless their degrees or rank (top management, subordinate or colleague).
- 2.d.3. **Communicate** effectively with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.
- 2.d.4. **Cope up** with difficult situations as breaking news.

2.e. Intellectual Skills:

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

- 2.e.1. **Integrate** facts about histological organs.
- 2.e.2. **Analyze** different histological data with its clinical correlations.
- 2.e.3. **Interpret** the normal histological facts with case scenario.

2.f. General and transferable Skills:

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

- 2.f.1. **Present** data in an organized and informative manner.
- 2.f.2. **Establish** life-long self-learning required for continuous professional development.
- 2.f.3. **Use** the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.
- 2.f.4. **Retrieve**, manage, and manipulate information by all means, including electronic means.
- 2.f.5. **Present** information clearly in written, electronic and oral forms.
- 2.f.6. **Establish** effective interpersonal relationship to communicate ideas and arguments.

3. Course contents:

Week 1	
Lecture 1	Introduction to the course and guidelines
Lecture 2	Methods of histological studies I (Light & Electrone Microscpes)
Practical	Groups Distribution
Week 2	
Lecture 1	Methods of histological studies II (Tissue Preparation)
Lecture 2	The cell
Practical	the cell and staining
Week 3	
Lecture 1	Cell Division
Lecture 2	Extracellular Matrix
Practical	Light microscope Usage
Week 4	
Lecture 1	Epithelium I
Lecture 2	Epithelium II
Practical	The cell structure and division

Week 5	
Lecture 1	Connective Tissue Classification
Lecture 2	Connective Tissue (Bone I)
Practical	Epithelium
Week 6	
Lecture 1	Connective Tissue (Bone II)
Lecture 2	Connective Tissue (Cartilage)
Practical	Epithelium & Connective Tissue
Week 7	
Lecture 1	Connective Tissue (Blood)
Lecture 2	Glands
Practical	Connective Tissue

Day	Date	Topic
Week 8		
Lecture 1		Muscular Tissue
Lecture 2		
Practical		Connective Tissue

Week 9	
First Written on-line Examination	
Lecture 2	skin I
Practical	No Practical

Week 10	
Lecture 1	System (Urinary)
Lecture 2	skin II
Practical	Integrated System I (Cytoskeleton)

Week 11	
Lecture 1	System (Circulatory)
Lecture 2	System (Respiratory)
Practical	Integrated System II (Respiratory & Circulatory)

Week 12	
Lecture 1	System (Digestive I)
Lecture 2	System (Digestive II)
Practical	Integrated System III (Digestive & Urinary)

Week 13	
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Lecture 1	System (Reproductive, Male)
Lecture 2	System(Reproductive, Female)
Practical	Review

Week 14	
Lecture 1	Practical Exam
Lecture 2	Practical Exam
Practical	

Week 15	
Lecture 1	System(Nervous PNS)
Lecture 2	System(Nervous CNS 1)
Practical	

4-Teachingandlearningmethods:

METHODS USED:

- Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- Lectures and/or handouts - are not to replace the main source of information, that is the textbook.
- Practical classes: practical classes

TEACHING PLAN:

30 LECTURES

30 PRACTICAL

Time plan:

Item	Time schedule	Teaching hours
Lectures	2Times/week(eachtime1hour)	30 hours
Practicalclasses	2 Hours/ week	30 hours
Total	3 C.hrs. /week	60 hours

5- StudentsAssessmentmethods:

5-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) WeightingSystem:

Examination	Marksallocated
Finalexam: a- Written b- Practical	100 50
Total	150

5-D) Examinationdescription:

Examination	Descrip
Finalexam: a- Written b- Practical	<input type="checkbox"/> select(MCQs),Shortessay,cases,complete, crossmatching

6-List of references:

6.1- Basic Materials:

- 1- Histology&cellBiologyDepartment,
- 2- Practicalbooks

6.2-Essentialbooks(textbooks):

1-Gartner L.P.and HiattJ.L.(2007):

ColortextbookofHistology(3rd)edition.

2-RossM.H.andPawlinaW.,(2006):

- Histology(Atextandatlaswithcorrelatedcellandmolecular biology(5th)edition.
- HistologyandCellBiology:AnintroductiontoPathology,(2nd)

6.3-Periodicals,Websites,etc:

-<http://www.medscape.com>.

-<http://www.pubmed.com>.

-<http://sciencedirect.com>.

7- Facilities required for teaching and learning:

- Proper lecturerooms.
- Computers and datashow.
- ElectronicWhiteBoard and its requirements. Laser points.
- Wellequipped laboratories.

Course coordinator: Prof. Dr./

Head of Department: Prof. Dr.



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Physiology Department

Course Name: General Physiology
Code: MED124

A) Basic Information

1. **Course title:** General Physiology.
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** Physiology Department
4. **Academic year:** second semester of first year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:** Prof. Dr. -----
7. **Allocated marks:** 150 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	3 credit hrs=45 hrs
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B) Professional Information:

1- Overall Aim of the Course: this course aims to:

1. To introduce and familiarize students with basic definitions and principles related to physiology as a study of the living body at molecular, cellular as well as the level of intact organism.
2. To introduce the concept of internal environment and homeostasis and to present some. Examples of homeostatic mechanisms of the major functional systems and various control. Systems that are utilized by different organs to regulate various physiological functions.
3. To describe the principles and mechanisms of membrane transport.
4. To describe the physiological implications related to circulating body fluids.
5. To describe the electrical and ionic events that underline the excitation of nerves, muscles as well as the mechanism underlying skeletal muscle contraction.
6. To describe synaptic transmission and electrical properties of synaptic potential.
7. To cover the general organization and functional aspects of the autonomic nervous system.
8. To introduce the motor and sensory functions of nervous system
9. To describe the general organization and functions of cardiovascular, respiratory, digestive and renal systems and their role in maintenance of homeostasis.
10. To illustrate interdependence of endocrine and nervous system and describe the principal components of the endocrine system in terms of hormones action, secretion and physiological effects.

2- Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

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

1. **Introduce** and familiarize with basic definitions and principles related to physiology as a study of the living body at molecular, cellular as well as the level of intact organism.

2. **Introduce** the concept of internal environment and homeostasis and to present some. Examples of homeostatic mechanisms of the major functional systems and various control. Systems that are utilized by different organs to regulate various physiological functions.
3. **Describe** the principles and mechanisms of membrane transport.
4. **Describe** the physiological implications related to circulating body fluids.
5. **Describe** the electrical and ionic events that underline the excitation of nerves, muscles as well as the mechanism underlying skeletal muscle contraction.
6. **Describe** synaptic transmission and electrical properties of synaptic potential.
7. **Cover** the general organization and functional aspects of the autonomic nervous system.
8. **introduce** the motor and sensory functions of nervous system
9. **Describe** the general organization and functions of cardiovascular, respiratory, digestive and renal systems and their role in maintenance of homeostasis.
10. **Illustrate** interdependence of endocrine and nervous system and describe the principal components of the endocrine system in terms of hormones action, secretion and physiological effects.

2.2. Communication skills:

By the end of the program the graduate will be able to:

- 2.2.1. **Communicate** clearly, sensitively and effectively with patients and their relatives, and colleagues from a variety of health and social care professions.
- 2.2.2. **Establish good** relations with other health care professionals regardless of their degree or rank (top management, subordinate or colleague).
- 2.2.3. **Communicate** effectively with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.

2.3. Intellectual Skills:

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

- 2.3.1 **Interpret** the normal physiological structures and function.
- 2.3.2 **Analyze** the relation between the knowledge of internal structure and the reach to professional diagnosis.

2.4. General and transferable Skills:

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

- 2.4.1. **Present** data in an organized and informative manner.
- 2.4.2. **Establish** appropriate professional attitudes and behaviors in different practice situations.
- 2.4.3. **Establish** life-long self-learning required for continuous professional development.
- 2.4.4. **Use** the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.
- 2.4.5. **Retrieve**, manage, and manipulate information by all means, including electronic means.
- 2.4.6. **Present** information clearly in written, electronic and oral forms.
- 2.4.7. **Establish** effective interpersonal relationship to Communicate ideas and arguments.

3- Coursecontents:

week	Topic	
1	Lecture 1: Homeostatic Lecture 2: control system Lecture 3: cell membrane	<ul style="list-style-type: none"> • Introduction to physiology • Homeostatic mechanisms of major functional systems, Definition of Homeostasis. The • Extracellular Fluid and the milieu interior (internal environment). Control systems of the body: Characteristics of control systems, negative feedback nature of most control systems, positive feedback. Adaptive control system • General characteristics of cell membrane. Transport of ions and molecules through the cell membrane: Diffusion; simple and facilitated, osmosis
2	Lecture 1: active transport Lecture 2: Body fluids Compositions Lecture 3: osmosis	<ul style="list-style-type: none"> • Primary active transport; characteristics and importance of active transport. • Secondary active transport (co-transport and counter – transport) • Active transport through cellular sheet • Body fluids: Total body water. Body fluid compartments: intracellular and extracellular. • Compositions of different body fluid compartment • Measurement of body fluid volumes: The indicator dilution principle. • Basic principles of osmosis and osmotic pressure
3	Lecture 1: fluid shifts between body fluid compartment Lecture 2: shift to fluid in different conditions Lecture 3: edema and factors causing it	<ul style="list-style-type: none"> • Changes in the volumes and osmolalities and calculation of fluid shifts in abnormal states I , • Changes in the volumes and osmolalities and calculation of fluid shifts in abnormal states (II) • Edema; intracellular and extracellular edema • Extracellular edema; causes and factors that prevent formation of edema
4	Lecture 1: resting membrane potential Lecture 2: action potential Lecture 3: Neuromuscular Junction and synaptic	<ul style="list-style-type: none"> • Origin of bioelectric potentials : Ionic equilibria and the resting membrane potential. Calculation of RMP using Nernst equation and GHK equations. • Generation and conduction of nerve action potential: Ionic basis of action potential and its properties. Propagation of action potential, serial versus salutatory conduction. • Neuromuscular Junction and Neuromuscular transmission. • The End plate potential and its ionic basis. • Chemical synaptic Transmission and synaptic potentials,
5	Lecture 1: molecular basis of skeletal muscle contraction Lecture 2: Mechanics of skeletal muscle contraction Lecture 3: types of muscle	<ul style="list-style-type: none"> • Excitation contraction coupling and molecular basis of skeletal muscle contraction of skeletal Muscle contraction. • Mechanics of skeletal muscle contraction. Isotonic and isometric contraction. Force-Velocity relationship. • Length tension relationship. Summation and tetanization. • Smooth and cardiac muscle contraction. Comparison of three types of muscle; skeletal, smooth and cardiac
6	Lecture 1: general organization(Autonomic nervous system) Lecture 2: Control of visceral functions	<ul style="list-style-type: none"> • Autonomic nervous system: introduction and general organization. • Chemical transmission of autonomic junctions cholinergic and adrenergic transmission, types of cholinergic and adrenergic receptors. • Effects of sympathetic and parasympathetic stimulation on specific visceral organs autonomic reflexes and their role in the regulation of visceral functions.

7	Lecture 1: Nephron, Renal circulation Lecture 2: Glomerular filtration rate Lecture 3: Tubular functions	<ul style="list-style-type: none"> • Overview of the renal system, functional anatomy of nephron. • Renal circulation. Glomerular filtration. • Glomerular filtration rate and it's regulation • Tubular functions, solutes and water transport. • Mechanism of urine concentration
8	Lecture 1: Transport of solutes through renal tubules Lecture 2: organization of nervous system Lecture 3: cerebellum	<ul style="list-style-type: none"> • Counter current Multiplier and counter current exchanger • Overview functions and organization of nervous system • Cerebral cortex areas and their functions • Electroencephalogram (electrical recording of activity of cortical neurons) • Basal ganglia, cerebellum, thalamus and hypothalamus
9	Lecture 1: Limbic system and Brain stem Lecture 2: Sleep and it's type Lecture 3: Spinal cord and Somatic sensations	<ul style="list-style-type: none"> • Limbic system • Brain stem and reticular activating system • Sleep and it's type • Spinal cord and reflexes • Sensory modalities, sensory receptors • Somatic sensations; Pain
10	Lecture 1: Chemical characteristics of hormones. Lecture 2: pituitary gland Lecture 3: Thyroid gland	<ul style="list-style-type: none"> • Endocrine system; comparison between endocrine and nervous systems • Hormones; chemical structure, transport and receptors • Variation in responsiveness of target cells to their hormones • Hormones of pituitary gland • Thyroid gland and it's hormones
11	Lecture 1: Pancreas Lecture 2, 3: Adrenal gland and it's hormones	<ul style="list-style-type: none"> • Pancreatic hormones • Adrenal gland and it's hormones
12	Lecture 1: Organization of cardiovascular system Lecture 2: cardiac cycle	<ul style="list-style-type: none"> • Over view of the cardiovascular system • The cardiac cycle and cardiac output
13	Lecture 1: Electrical activity of the heart Lecture 2: heart rate and arrhythmias Lecture 3: Microcirculation	<ul style="list-style-type: none"> • Electrical activity of the heart, electrocardiogram • Control of heart rate and cardiac arrhythmias • Hemodynamics, blood pressure and blood flow. Microcirculation and lymphatic
14	Lecture 1: Function of respiratory systems Lecture 2: Mechanics of respiration Lecture 3: gas diffusion	<ul style="list-style-type: none"> • Overview of the respiratory systems. Pulmonary ventilation • Mechanical aspects of breathing. • Pulmonary circulation, gas diffusion and transport of oxygen and carbon dioxide.
15	Lecture 1: Control of breathing Lecture 2: Basic Gastrointestinal Function Lecture 3: Stomach and pancreas	<ul style="list-style-type: none"> • Control of breathing • Overview of the Gastrointestinal system, the four basic GIT functions; motility, secretion, digestion and absorption • functions of the stomach • functions of the pancreas
16	Lecture 1: functions of intestine	functions of small and large intestine Revision

4-Teaching and learning methods:

METHODS USED:

- Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- Lectures and/or handouts - are not to replace the main source of information, that is the textbook.

TEACHING PLAN:

Lectures: 45 lectures

Time plan:

Item	Timeschedule	Teaching hours
Lectures	3 times/week/15 weeks (3C. hours/week)	45hours
Total	3 C. hours /week/15 week	45hours

5- Students Assessment methods:**5-A) ATTENDANCE CRITERIA:**

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1 st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) Weighting System:

Examination	Marks allocated
Finalexam: a-Written	150
Total	150

5-D) Examination description:

Examination	Description
Finalexam: a-Written	<input type="checkbox"/> select(MCQs), Shortessay, cases, complete, crossmatching

6- List of references:

6.1- Basic Material

1. Fundamental of Physiology, a human perspective by Sherwood, third edition 2006
2. Textbook of medical physiology by Guyton and Hall, eleventh edition 2005.

6.2- Essential books(textbooks):

a) John E Hall and Arthur C Guyton; Textbook of Medical Physiology, twelfth edition: 2012.

b) Kim E Barrett and Scott Boitano; Review of Medical Physiology,

6.3- Periodicals, Web sites, etc:

- <http://www.medscape.com>.- <http://www.pubmed.com>.- <http://sciencedirect.com>.**7- Facilities required for teaching and learning:**

Facilities used for teaching this course include:

- Faculty lectures halls:

- Data show, scientific pictures archives.

Course coordinator: Prof. Dr./**Head of Department: Prof. Dr./**



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Microbiology
Course Name: General Microbiology
Code: MED 211

A. Basic Information:

1. **Course title:** General Microbiology
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** Microbiology Department
4. **Academic year:** first semester of second year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:** Prof. Dr. -----
7. **Allocated marks:** 275 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	4 credit hrs=60 hrs
2- Practical	1.5 credit = 45 hr

B) Professional Information:

1- Overall Aim of the Course:

this course aims to:

- 1.1 **To Provide** students with the essential knowledge of general bacteriology, virology, microbial genetics and the structure and function of the immune system.
- 1.2. **To provide** the student with skills essential for the appropriate specimen for diagnosis and suitable technique used for diagnosis of bacterial, viral and fungal infection.

2- Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

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

- 2.1.1. **Describe** general bacterial morphology, microbial physiology, genetics and the basis of molecular biology.
- 2.1.2. **Mention** the principles of growing and cultivating microorganisms
- 2.1.3. **Summarize** the host-parasite relationship and microbial pathogenesis.
- 2.1.4. **Enumerate** the basics of antimicrobial chemotherapy and resistance, their mode of action, application and complications in vivo.
- 2.1.5. **List the** principles and methods of decontamination and sterilization.
- 2.1.6. **Explain** the physiology of the immune system, its beneficial role, its interaction with tumors, its deficiency conditions, as well as its detrimental role in hypersensitivity, autoimmunity and transplant rejection.

2.2. Communication skills:

By the end of the program the graduate will be able to:

- 2.2.1. **Communicate** clearly, sensitively and effectively with patients and their relatives, and colleagues from a variety of health and social care professions.
- 2.2.2. **Establish good relations** with other health care professionals regardless of their degree or rank (top management, subordinate or colleague).
- 2.2.3 **Communicate effectively** with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.

2.3. Intellectual Skills:

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

- 2.3.1. **Categorize** a microorganism as a bacterium, virus or fungus according to standard taxonomy.
- 2.3.2. **Differentiate** between physical and chemical methods of sterilization.
- 2.3.3. **Determine** the appropriate antimicrobial used in treatment of different infections.
- 2.3.4. **Determine** the appropriate clinical sample suitable for each disease.
- 2.3.5. **Appreciate** the danger of handling and use of infectious agents in community and environment and those with dangerous infectious diseases as a part of their ethical heritage.

2.4. General and transferable Skills:

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

- 2.4.1. Evaluate the risk of disseminating infections in the hospital and community through other cases, carriers or even health care workers during manipulating and handling infectious material.
- 2.4.2. Establish life-long self-learning required for continuous professional development through using the sources of medical information and communication technology to remain in current with advances in knowledge and practice.

2.5. Practical Skills:

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

- 2.5.1. **Perform** and distinguish the results of Gram staining and Ziehl-Neelsen staining and microscopic examination of stained preparations
- 2.5.2. **Identify** different microbial culture media.
- 2.5.2. **Identify** the biochemical and serological tests commonly used for bacterial identification and distinguish positive and negative results.
- 2.5.4. **Identify** different methods used in diagnosis of viral diseases.

3- Course contents:

Subject	Lectures (hrs)	Practical (hrs)	Total (hrs)
Introduction to Microbiology	1	-	1
Bacterial Cell Structure	1	-	1
Bacterial Physiology, Metabolism, Reproduction And Growth Curve	1	-	1
Host parasite relationship	1	-	1
Bacterial genetics & Genetic engineering	2	-	2

Antimicrobial chemotherapy	2	-	2
Safety procedure & Microscope	-	2	2
Film preparation and different stains	-	2	2
Disinfection and Sterilization	2	4	6
Culture media and identification of isolated bacteria	-	8	8
Collection of samples for bacteriological examination	-	2	2
Basic Immunology	8	-	8
Special immunology	7	-	7
Serological tests	1	5	6
General virology	6	-	6
Laboratory diagnosis of viral infections	1	2	3
Staphylococci , streptococci, pneumococci and Neisseria	2	2	4
Corynebacteria	1	2	3
Prion diseases	1	-	1
Bacillus Group	1	2	3
Clostridium	1	2	3
Mycobacteria	1	2	3
Gram negative bacilli	2	4	6
Spirochaetes	1	2	3
Rickettsia	1	-	1
Chlamydia	1	-	1
Miscellaneous organisms	1	-	1
Brucella, Haemophilus, Yersinia & Bordetella	1	1	2
Mycoplasma & Actinomycetes	1	-	1
DNA viruses	2	-	2
Hepatitis viruses	3	-	3
Oncogenic viruses	1	-	1

Mycology	5	4	9
Nosocomial infections and Infection control	1	-	1

4-Teachingandlearningmethods:

METHODS USED:

- 1- Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- 2- Lectures and/or handouts - are not to replace the main source of information, that is the textbook.
- 3- Practical classes: practical classes

Time plan:

Item	Time schedule	Teaching hours
Lectures	4Times/week (eachtime1hour)	60 hours
Practicalclasses	3 Hours/ week	45 hours
Total	7 hrs. /week	105hours

5- StudentsAssessmentmethods:

5-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) WeightingSystem:

Examination	Marksallocated
Finalexam:	
c- Written	200
d- Practical	75
Total	275

5-D) Examinationdescription:

Examination	Description
Finalexam:	
c- Written	<input type="checkbox"/> select(MCQs),Shortessay,cases,complete, crossmatching
d- Practical	

6- List of references:

6.1- Basic materials:

- 6.1.1. **Medical Microbiology:** Department book and practical manual. (2013-2014)
- 6.1.2. **Lectures on Medical Virology:** Department book. (2013-2014)
- 6.1.3. **Basic Immunology:** Department book. (2013-2014)

6.2- Essential books (textbooks):

- 6.2.1. Jawetz, Melnick and Adelberg's *Medical Microbiology 24th Edition*.
Copyright © 2007 by The McGraw-Hill Companies, Inc
- 6.2.2. *Mackie & McCartney Practical Medical Microbiology. 14e (hb) 2008* by
Elsevier Private Limited India. ISBN: 9788131203934
- 6.2.3. Abul K. Abbas, Andrew H. Lichtman, Cellular and molecular immunology
Shiv Pillai. Updated 8th ed. 2014. ISBN 9780323222754

6.3- Recommended books:

- 6.3.1. Richard A. Harvey, Pamela C. Champe, Bruce D. Fisher (2007): Lippincott, illustrated review microbiology and parasitology, by Lippincott Williams & Wilkins ISBN: 0781782155
- 6.3.2. Bonnie A. B. Lauritz A. J. (2009): Lippincott's Illustrated Q&A Review of Microbiology and Immunology by Lippincott Williams & Wilkins, 1st ed. ISBN-13: 978-1582558578

6.4- Periodicals, Websites, etc:

1. asmnews@asmusa.org
2. <http://www.phage.org/black09.htm>
3. http://www.microbe.org/microbes/virus_or_bacterium.asp
4. <http://www.bact.wisc.edu/Bact330/330Lecturetopics>
5. http://whyfiles.org/012mad_cow/7.html
6. <http://www.microbelibrary.org>
7. <http://www.hepnet.com/hepb.htm>

7- Facilities required for teaching and learning:

Facilities used for teaching this course include:

- Faculty lecture halls:
- Department lecture halls:
- Department Equipped Laboratories:

Course coordinator: Prof. Dr./

Head of Department: Prof. Dr.



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Medical Parasitology
Course Name: General Parasitology
Code: MED 212

A)Basic Information:

1. **Course title:**Medical Parasitology
2. **Specialty:**M.B.B.S. program
3. **Department offering the course:**Medical Parasitology
4. **Academic year:**first semester of second year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:**Prof. Dr. -----
7. **Allocated marks:** 300 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	4 credit hrs.=60 hrs.
2- Practical	2 credit = 60 hrs.

B)Professional Information:

1-Overall Aim of the Course: this course aims to:

- 1.1. To focus on: applied clinical Parasitology, diagnosis, prevention and control of the different parasitic infections.
- 1.2. To be aware of basic epidemiological and environmental factors in relation to parasitic infections with special emphasis on local endemicity.
- 1.3. To provide a diagnostic educational laboratory to the student.

2-Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

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

- 2.1.1. **Define** parasitology nomenclature, geographical distribution, different hosts, and helminthic parasitic zoonosis.
- 2.1.2. **Identify** the basic concepts and principle of parasitism.
- 2.1.3. **Mention** pathogenesis, pathology, clinical picture and host parasite relationship of different helminthic parasites.
- 2.1.4. **illustrate** morphology, life cycle of different helminthic parasites.
- 2.1.5. **Classify** different helminthic parasitic infections.
- 2.1.6. **Explain** diagnostic methods (direct and indirect) treatment, prevention and control of helminthic parasitic diseases.

2.2. Communication skills:

By the end of the program the graduate will be able to:

- 2.2.1. **Communicate** clearly, sensitively and effectively with colleagues from a variety of health and social care professions.
- 2.2.2. **Establish** good relations with other healthcare professionals regardless of their degree or rank (top management, subordinate or colleague).
- 2.2.3. **Communicate** effectively with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.
- 2.2.4. **Respect** superiors, colleagues and all members of the health profession.

2.3. Intellectual Skills:

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

- 2.3.1. Analyze any given data in a laboratory report or case study and relate it to causative parasite.
- 2.3.2. Interpret the most important signs and symptoms of important helminthic parasitic infections of endemic character.
- 2.3.3. Analyze a case scenario of parasitic infections to reach proper diagnosis.

2.4. General and transferable Skills:

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

- 2.4.1. Communicate in group working and problem solving
- 2.4.2. Respect the role of the staff and co-staff members regardless of degree or occupation.
- 2.4.3. Computing skills for research work.

2.5. Practical Skills:

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

- 2.5.1. Perform different methods of blood, urine and stool examination and some staining procedures.
- 2.5.2. Operate laboratory equipments safely and carefully.
- 2.5.3. Illustrate different helminthic parasitic stages, preserve fresh specimens,

3. Course contents:

	Lectures (2 lectures /week, one credit each)	Teaching hours	Practical 2hrs/week (=1 credit)
1	Introduction to parasitology	1	1
2	Helminth immunology: immunerespons, pathology, immunodiagnosis	3	-
3	CLASS: TREMATODA	7	3
	introduction	1	1
	Schistosomes; immunity	2	
	Snails	1	1
	Fasciola	1	
	Heterophyes	1	
	Case study	1	
	Revision		1
4	CLASS: CESTODA	6	3
	Introduction	1	1
	Diphyllobothrium; sparganosis	1	
	Taenia, cysticercosis	1	1
	Hymenolepis and Dipylidium	1	
	Echinococcus, Hydatidosis	1	
	Case study	1	
	Revision		1

5	CLASS: NEMATODA	10	5
	Introduction,Entrobium	1	1
	AscarisandToxocara	1	
	Hookworm,Trichostrongylus	1	1
	Strongyloides,larva migrans	1	
	Trichuris,Clinicalcases	1	1
	Trichinella	1	
	Filaria;immunity	3	1
	Casestudy	1	
	Revision		1
7	Stool,urineand blood exam.	3	2
8	Practicalexam		4
9	- Protozoa:Introduction	1	1
10	- Protozoaimmunology	2	-
11	- Amoeba&ciliates	3.	1
	- Amoeba	2	1
	- Balantidium&clinicalcases	1	
12	- Flagellates	6.	1
	- Giardia;Trichomonasvaginalis;	1	1
	- Leishmania;leishmaniaimmunity	2	
	- Trypanosoma;immunity.	2	
	- Clinicalcases	1	
13	- Sporozoa	7	2
	- Plasmodium;malariaimmunity	2	1
	- Toxoplasma	1	1
	- Cryptosporidium;Babesiaisospora; cyclospora;sarcocystis	3	
	- Clinicalcases	1	-
14	-Entomology:introduction	1	-
15	- Mosquitoes	2	1
16	- Flies	2	1
17	- Fleas	1	1
18	- Ticks	1	1
19	- Mites	1	1
20	- Lice	1	1
21	-Bugs; Cyclops;clinicalcases	2	1
22	- Practicalrevision		2
23	- Practicalexam		1

4-Teachingandlearningmethods:

METHODS USED:

- 1- Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- 2- Lectures and/or handouts - are not to replace the main source of information, that is the textbook
- 3- Practical classes: practical classes

Time plan:

Item	Time schedule	Teaching hours
Lectures	4Times/week (eachtime1hour)	60 hours
Practicalclasses	4 Hours/ week	60 hours
Total	8hrs. /week	120 hours

5- StudentsAssessmentmethods:

5-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) WeightingSystem:

Examination	Marksallocated
Finalexam:	
e- Written	200
f- Practical	100
Total	300

5-D) Examinationdescription:

Examination	Description
Finalexam:	
e- Written	<input type="checkbox"/> select(MCQs),Shortessay,cases,complete, crossmatching
f- Practical	

6-List of references:

6.1- Basic Materials:

6.2- Essential books:

- Gerald (2007): Parasites and infectious diseases.
- Barbra D.(2008):Molecular mechanism of parasite invasion.
- David M.(2008):Advances in parasitology control of human parasitic diseases.

6.3- Recommended books:

- Manson's Tropical Diseases, Cook GC (ed), 21st edition.London: WBSaunders, 2003.

6.4-Websites:

- <http://www.parasitesonline.net/>
- <http://pathmicro.med.sc.edu/book/parasit-sta.htm>
- http://www.dpd.cdc.gov/dpdx/HTML/Para_Health.htm
- <http://www.malaria.org/>

7- Facilities required for teaching and learning:

- Proper lecture rooms.
- Computers and data show.
- Electronic WhiteBoard and its requirements. Laser points.
- Well-equipped laboratories.

Course coordinator: Prof. Dr./

Head of Department: Prof. Dr.



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Pathology
Course Name: General Pathology
Code: MED 213

A. Basic Information:

1. **Course title:** General Pathology.
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** Pathology Department
4. **Academic year:** first semester of second year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:** Prof. Dr. -----
7. **Allocated marks:** 300 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	4 credit hrs.=60 hrs.
2- Practical	2 credit = 60 hrs.

B) Professional Information:

1- Overall Aim of the Course: this course aims to:

- 1.1 Familiarize students with fundamental base disease processes
- 1.2 Provide the students with knowledge of disease development and associated alteration of structure 'morphological changes', functional changes and complications of diseases in different body systems.
- 1.3 Provide the students with practical skills needed for macroscopically identification of different pathological lesions.

2- Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

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

- 2.1.1. **Mention** different causes, mechanisms, effects, types of cell injury and morphology (gross & microscopic) of tissues affected.
- 2.2.2. **list** different causes, mechanisms, effects, types of inflammation (including granulomatous inflammation), the morphology (gross & microscopic) of tissues affected and **discuss** different types and effects of bacterial and viral infections.
- 2.2.3. **Describe** types of stem cells and different processes of repair.
- 2.2.4 **Explain** the basic facts of immunopathology as well as the basic mechanisms underlying different immunological disorders affecting the body.
- 2.2.5. **Define** and explain the mechanisms of different circulatory disturbances, their complications and morphology (gross & microscopic) of tissues affected.
- 2.2.6. **summarize** disorders of growth including neoplasia, its basic facts and concepts, examples for different types of tumors
- 2.2.7 **Mention** the basis of genetic disorders and its contributions in various disease processes

2.2. Communication skills:

By the end of the program the graduate will be able to:

- 2.2.1. **Communicate** clearly, sensitively and effectively with patients and their relatives, and colleagues from a variety of health and social care professions.
- 2.2.2. **Establish** good relations with other health care professionals regardless of their degree or rank (top management, subordinate or colleague).
- 2.2.3. **Communicate** effectively with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.

2.3. Intellectual Skills:

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

- 2.3.1. **Interpret** pathology reports.
- 2.3.2. **Integrate** requested data for histopathological examination
- 2.3.3. **Analyze** data to suggest diagnosis
- 2.3.4. **Combine** the obtained information to diagnose a particular clinical problem according to the principles of evidence-based medicine
- 2.3.5. **Differentiate** between related pathological disorders affecting body
- 2.3.6. **Solve** related medical problems through frequent case studies

2.4. General and transferable Skills:

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

- 2.4.1- **Use** the sources of biomedical information to remain current with the advances in knowledge & practice.
- 2.4.2- **Gather and organize** material from various sources (including library, electronic and online resources).

2.5. Practical Skills:

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

- 2.5.1 **Apply** the gross features of surgically removed specimen.
- 2.5.2- **Use** the light microscope to examine and identify microscopic findings of some selected examples of studied diseases.
- 2.5.3- **Write** a pathological request concerning main features of gross appearance of the specimen.
- 2.5.4- **Write** a pathological report.

3. Course contents:

Subject	Lectures (hrs)	Practical (hrs)	Total (hrs)
General pathology			
Preparation of histological sections		3	3
Cell response to injury	9	3	12
Acute and chronic Inflammation	6	3	9
Stem cells & Tissue repair and healing	3		3
Immunology and graft rejection	6		6
Granulomas	7	6	13
Viral infections	3		3
Bacterial infections	1		1
Haemodynamic disturbances	8	3	11
Disorders of cellular growth, differentiation and maturation	1		1
Genetics	2		2
Irradiation	1		1
Vitamin deficiency	1		1
Molecular carcinogenesis	1		1
Neoplasia	11	12	24
Tutorial: 2 hours/week (2 x15)		30	30
Total	60	60	120

4- Teaching and learning methods:

METHODS USED:

- 1 Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- 2 Lectures and/or handouts - are not to replace the main source of information, that is the textbook.
- 3 Practical classes: practical classes

Time plan:

Item	Time schedule	Teaching hours
Lectures	4 Times/week (each time 1 hour)	60 hours
Practical classes	4 Hours/ week	60 hours
Total	8hrs. /week	120 hours

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1 st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) Weighting System:

Examination	Marks allocated
Finalexam:	
g- Written	200
h- Practical	100
Total	300

5-D) Examination description:

Examination	Description
Finalexam:	
g- Written	<input type="checkbox"/> select(MCQs), Shortessay, cases, complete, crossmatching
h- Practical	

6. LIST OF REFERENCES:.

6.1- Basic materials:

6.2- Essential books(text books):

- Cotran RS, Kumar V and Robbins SL: Robbins Pathologic Basis, 2010.
- Stevens A, Lowes Jet al.,: Core Pathology, 3rd ed. Mosby, 2009.

6.3- Recommended books:

- ElBolkainy MN, Nouh MA, ElBolkainy TN: General Pathology of Cancer, 2nd ed. NCI, Cairo University, 2013.
- Mills SE, et al, Sternberg's Diagnostic Surgical Pathology, Lippincott Williams & Wilkins, 2010

6.4- Periodicals,Web sites.... etc:

<http://www.pathmax.com/http://www.medib.med.utah.edu/WebPath/LABMENUhttp://www.med.uiuc.edu/PathAtlasf/titlePage.html>

<http://www.medscape.com/pathologyhomehttp://umc.edu/dept/path/2umc.edu/dept/path/2F>

7 Facilities required for teaching and learning:

- Facilities used for teaching this course include:
- Lecture halls :
- Small group classes:
- Laboratory:
- Data show:
- Smart board:
- Museum specimens

**Course coordinator: Prof. Dr./
Head of Department: Prof. Dr.**



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Pharmacology
Course Name: General Pharmacology
Code: MED 214

A) Basic Information:

1. **Course title:** Pharmacology
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** Pharmacology
4. **Academic year:** first semester of Second year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:** Prof. Dr. -----
7. **Allocated marks:** 250 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	4 credit hrs.=60 hrs.
2- Practical	1 credit = 30 hrs.

B) Professional Information:

1- Overall Aim of the Course:

- 1.1. To provide the basic knowledge about commonly used groups of drugs affecting different body systems.
- 1.2. To enable students to understand the safe use of drugs as regards adverse effects, contraindications and drug interactions.

2- Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

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

- 2.1.1. **define** different terms in pharmacology.
- 2.1.2. **explain** the basis of pharmacokinetics and pharmacodynamics of different drugs.
- 2.1.3. **Explain** the mechanisms of action of sympathomimetics, sympatholytics, parasympathomimetics, parasympatholytics, ganglion stimulants, ganglion blockers, cardiac glycosides, antihypertensives, nitrates, antiarrhythmic drugs, anticoagulants, antiplatelets, etc...
- 2.1.4. **Enumerate** indications, preparations, side effects, contraindications, main interactions of the studied drugs.
- 2.1.5. **Identify** proper methods of pharmacological intervention for different common diseases.
- 2.1.6. **Describe** manifestations, main lines of management of major drug groups (atropine, organophosphorus, cardiac glycosides, anticoagulants, iron)
- 2.1.7. **Summarize** the precautions, limitations of drugs with narrow safety margin (Dopamine, dobutamine, aminophylline and cardiac glycosides)

2.2. Practical skills

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

2.2.1. **Apply** different techniques of drug administration in humans.

2.2.2. **Select** the proper drug(s) for the proper common clinical situations in proper dosage.

2.2.4. **Audit** prescriptions citing multiple drugs with significant interactions (

digoxin, nitrates, anticoagulants, quinidine

2.2.5. **Demonstrate** the effect of autonomic drugs and skeletal muscle relaxants on isolated organs (toad's heart, rabbit intestine, toad's rectus) and on the rabbit's eye and rat's blood pressure.

2.3. Professional Attitude and Behavioral skills:

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

2.3.1. **Demonstrate** respect and work effectively as a member or a leader of an interdisciplinary team.

2.3.2. **Establish** good relations with colleagues to share all types of inter-professional activities including shared learning

2.4. Communications skills:

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

2.4.1. **Communicate** clearly, sensitively and effectively with colleagues from a variety of health and social care professions.

2.4.2. **Establish** good relations with other health care professionals regardless of their degree or rank (top management, subordinate or colleague).

2.4.3. **Communicate** effectively with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.

2.4.4. **Cope up** with difficult situations as breaking news.

2.4.5. **Respect** superiors, colleagues and all members of the health profession.

2.5. Intellectual skills

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

2.5.1. **Select** properly the drug suitable for different patient populations (renal, hepatic, pediatric, geriatrics, pregnancy)

2.5.2. **Calculate** accurately drug's dosage, bioavailability, plasma half-life and volume of distribution in different patient populations (renal, hepatic, pediatric, geriatrics)

2.5.3. **Predict** beneficial and harmful drug interaction in cases of multiple drug administration.

2.5.4. **Integrate** knowledge about biological effects of drugs and their pharmacokinetics to explain the therapeutic uses and adverse reactions on a pharmacological basis.

2.5.5. **Plan** for a specific clinical situation using non-drug and drug therapy by specific dose and duration.

2.6. General and transferable skills

2.6.1. **Establish** life-long self-learning required for continuous professional development.

2.6.2. **Use** the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

2.6.3. **Retrieve, manage, and manipulate** information by all means, including electronic means.

2.6.4. **Present** information clearly in written, electronic and oral forms.

2.6.5. **Establish** effective interpersonal relationships to communicate ideas and arguments.

2.6.6. **Work** effectively as a member or a leader of an interdisciplinary team.

2.6.5. Adopt the questioning approach to own work & that of others to solve clinical problems.

3. Course contents:

1-General pharmacology	10	6	16
2-Autonomic nervous system	16	12	28
3-Ocular pharmacology	2	4	6
4-Skeletal muscle relaxants	3	4	7
5-Autacoids	5	-	5
7-Renal pharmacology	4	-	4
8-Cardio-vascular pharmacology	14	4	18
9-Blood and blood forming organs	6	-	6
Total	60	30	90

4- Teaching and learning methods:

METHODS USED:

- 1- Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- 2- Lectures and/or handouts - are not to replace the main source of information, that is the textbook.
- 3- Practical classes: practical classes

Time plan:

Item	Time schedule	Teaching hours
Lectures	4 Times/week	60 hours
Practical classes	2 Hours/ week	30 hours
Total	5 C.hrs. /week	90 hours

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1 st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) WeightingSystem:

Examination	Marksallocated
Finalexam: i- Written j- Practical	200 50
Total	250

5-D) Examinationdescription:

Examination	Description
Finalexam: i- Written j- Practical	<input type="checkbox"/> select(MCQs),Shortessay,cases,complete, crossmatching

6-List of references:

6.2 EssentialBooks(TextBooks):

Principlesofpharmacology(2012):thepathophysiologicbasisofdrug[etal.], Philadelphia :
LippincottWilliams&Wilkins.

6.3- Recommended Books:

GOODMAN AND GILMAN (2011): THE PHARMACOLOGICAL BASIS OF
THERAPEUTICS12th edition.

6.4- web Sites:

www.micromedex.com

7-FacilitiesRequiredforTeachingandLearning

- Lecture rooms:
- Laboratories:
- Sectionrooms:
- Audio-visualteachingequipments(Computer, Projector, Video,smartboard
- Models,videotapes,scientific picturesarchives

Course coordinator: Prof. Dr./

Head of Department: Prof. Dr.



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Community Medicine I
Course Name: Community Medicine
Code: MED 215

A) Basic Information

1. **Course title:** Community Medicine I
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** Community Medicine Department
4. **Academic year:** first semester of second year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:** Prof. Dr. -----
7. **Allocated marks:** 125 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	2 credit hrs=30 hrs
2- Practical	0.5 credit hrs=15 hrs

B) Professional Information:

1- Overall Aim of the Course: this course aims to:

- provide the undergraduate with educational experience necessary for further practice in the field of public health through providing:
 - practice medicine at the primary level of health, dealing with health problems commonly met-with in clinical practice with proper awareness of the social and community contexts of healthcare.
 - Gain Basic knowledge of epidemiology of the diseases.

2- Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

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

- 2.1.1. **Define** different Public health terminology.
- 2.1.2. **List** the basic determinants of health, principles of disease prevention and the scientific basis and interpretation of various diagnostic modalities for early detection of community health problems.
- 2.1.3. **Identify** the Principle & the organization of the healthcare system.
- 2.1.4. **Describe** the principles of epidemiology and the basic principles governing population studies (demography).
- 2.1.5. **Explain** the results of disease surveillance and screening
- 2.1.6. **Describe** the basic issues for promoting health, preventing & controlling disease and disability

2.2. Practical and Clinical Skills

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

- 2.2.1 **Diagnose** any pattern of spread of infectious diseases.
- 2.2.2 **Write** a report about any epidemic investigation.
- 2.2.3 **Demonstrate** the ecological factors of any disease.
- 2.2.4 **Examine** the environment for any health hazards.
- 2.2.5 **Write** a report about any field visit.
- 2.2.6 **Establish** a strategy for prevention and control of any health problem.
- 2.2.7 **Apply** infection control principles and safety measures during clinical practice.

2.3. Communication skills:

By the end of the program the graduate will be able to:

- 2.3.1. **Demonstrate** Respect for college's right & involve them in care takers in management decisions.
- 2.3.2. **Demonstrate** Respect to all colleges irrespective of their socioeconomics level, culture
- 2.3.3. **Demonstrate** Respect for right researches' and involve them and/or their in management decisions.
- 2.3.4. **Respect** the role and the contributions of other health care professionals regardless their degrees or rank (top management, subordinate or colleague)

2.4. Intellectual Skills:

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

- 2.4.1. **Combine** the clinical and investigational database to be efficient in clinical problem solving.
- 2.4.2. **Analyze** all sources of information in addition to the patient interview to Interpret and evaluate the medical history. Such sources include family or friends, medical records and other health care professionals, to overcome limitations regarding information.
- 2.4.3. **Adopt** the questioning approach to own work & that of others to solve clinical problems.
- 2.4.4. **Formulate** a research hypothesis & questions.
- 2.4.5. **Analyze** and **interpret** medical data precisely.

2.5. General and transferable Skills:

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

- 2.5.1 **Establish life**-long self-learning required for continuous professional development.
- 2.5.2 **Use** the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.
- 2.5.3 **Retrieve**, manage, and manipulate information by all means, including electronic means.
- 2.5.4 **Present** information clearly in written, electronic and oral forms.
- 2.5.5 **Establish** effective interpersonal relationship to Communicate ideas and arguments.

3- Course contents:

Subject	Lectures (hrs)	rounds (hrs)	Total (hrs)
1-INTRODUCTION:- <input type="checkbox"/> Health&disease <input type="checkbox"/> Healtheducation	5	5	10
2- GENERALEPIDEMIOLOGY:- <input type="checkbox"/> Definitionof epidemiology <input type="checkbox"/> Reservoirof infection <input type="checkbox"/> Modesof transmission <input type="checkbox"/> Natural&acquiredimmunity <input type="checkbox"/> Vaccinations& seroprophylaxis <input type="checkbox"/> Pattern of spread of infectious diseases <input type="checkbox"/> Prevention& controlmeasures <input type="checkbox"/> investigationof epidemics <input type="checkbox"/> Hospitalacquiredinfection <input type="checkbox"/> Sterilization& disinfection <input type="checkbox"/> Surveillance	25	10	35
Total	30	15	45

4- Teachingandlearningmethods:

METHODS USED:

- Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- Lectures and/or handouts - are not to replace the main source of information, that is the textbook.
- Labs are group activities where:
 - A-Students prepare lists of structures to be identified.
 - B-Supervised identification will be carried out.
 - C-Group discussions are very much encouraged.

TEACHINGPLAN:

Lectures: 30 lectures

Smallclasses: 15 practicalclasses

Time plan:

Item	Timeschedule	Teaching hours
Lectures	2 times/week/15weeks (2 C. hours/week)	30 hours
Practicalclasses	1 times/week/ 15week (0.5 C. hours/week)	15 hours
Total	2.5 C. hours /week/15 week	45hours

5- StudentsAssessmentmethods:

5-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1 st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) WeightingSystem:

Examination	Marksallocated
3- Finalexam:	
a-Written	100
b- Practical	25
Total	125

5-D) Examinationdescription:

Examination	Description
Finalexam: a-Written	<input type="checkbox"/> select(MCQs),Shortessay,cases,complete, crossmatching

6-Listofreferences:**6.1-Basicmaterials:****6.2- Essentialbooks(textbooks):**

KhalilIF,1999:CommunityMedicine.CairoUniversity

6.3- Recommendedbooks:

MaxcyRL,2008: Publichealthandpreventive medicine

6.4- Periodicals,Web

[http://www.Winhttp://www.pubmed.com,http://scien
cedirect.com](http://www.Winhttp://www.pubmed.com,http://scien
cedirect.com).

Internationaljournalof epidemiology

7- FACILITIESUSEDFOR TEACHINGANDLEARNING:

Facilities which willbeusedfor teachingthiscourseinclude:

- Lecturehall
- Datashow
- Smartboard
- Educationalvideos
- Posters

Coursecoordinator: Prof.Dr./

HeadofDepartment:Prof.Dr./



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine**

**Course Name: Cardiovascular System (CVS)
Code: MED 221**

A. Basic Information

1. **Course title:** Cardiovascular System (CVS)
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** Multidisciplinary
4. **Academic year:** Second year second semester
5. **Date of specification approval:**
6. **Internal Evaluator:**
7. **Allocated marks:** 300 marks.
8. **Course duration:** 6 weeks of teaching.
9. **Credit hours:** 6
10. **Teaching Approaches:** Integrated System block with PBL

B) Professional Information:

1- Overall Aim of the Course:

Upon successful completion of this course students should be able to:

1. Identify the anatomy of mediastinum, heart chambers, valves, general and Topographic of the great vessels and their distribution.
2. Describe the microscopic appearance of different parts of the cardiovascular system, normal embryological development with their common congenital abnormalities.
3. Describe and understand the electrocardiogram cardiac cycle, hemodynamics, regulation of blood flow and blood pressure, microcirculations, and the mechanism of circulatory shock.
4. Understand the metabolism of the cardiac muscles and the value of the cardiac enzymes and Troponins and their role in the diagnosis of acute myocardial disease.
5. Recognize the role and types of lipoprotein disorders and the mechanism of formation of atherosclerosis.
6. Recognize the characteristics of microorganisms that cause infection of the cardiovascular system, their pathogenicity and methods of identification.
7. Define with the more common types of cardiovascular diseases with emphasis on (etiology, mechanism, morphology and briefly to correlate the pathological aspects of diseases with clinical manifestations).
8. Understand the mechanisms of action, pharmacokinetics, uses and adverse effects of commonly used drugs in the treatment of cardiac failure, cardiac arrhythmias, hypertension, angina and drugs used in hyperlipidemias.
9. Recognize the major cardiovascular risk factors in health and diseases.
10. Identify the nutritional and dietetic components in the etiology, management, and prevention of cardiovascular diseases.

2. Course contents:

A. Theory

#	Lecture Title	Lecture Objectives
1&2	Introductory Case Presentation for CVS	<ol style="list-style-type: none"> 1. Understand the general outline of the CVS module. 2. Be familiar with the modalities of teaching throughout the course. 3. Acknowledge the important relation between normal and abnormal structure and function. 4. Appreciate the importance of basic sciences in clinical application.
3	Mediastinum & pericardium (Anatomy)	<ol style="list-style-type: none"> 1. Describe divisions of the mediastinum. 2. Describe the outline and normal position of the heart. 3. Understand and identify relations of different parts of the heart in the middle mediastinum. 4. Identify and list various contents of the mediastinum. 5. Define the pericardium and describe its covering layers. 6. Describe its attachment to the diaphragm and the root of the great vessels. 7. Discuss the pericardial space and its recesses and pericardial fluid in normal conditions. 8. Describe innervations of the fibrous pericardium.
4	Heart chambers, valves Conductive system and Innervations of the heart (Anatomy)	<ol style="list-style-type: none"> 1. Describe divisions of the heart into four chambers and the internal and external features of each chamber. 2. Describe different parts of the conductive system of the heart and their arrangement and function within the myocardium. 3. Understand and describe the principle of cardiac referred pain. 4. Identify papillary muscles and describe their locations and importance. 5. Describe the atrio-ventricular valves and their position and the attachment of the cusps to papillary muscles and their functional importance. 6. Describe the aortic and pulmonary semilunar valves and their position and functional importance.
5	Development of The heart (Anatomy)	<ol style="list-style-type: none"> 1. Discuss the primary formation and folding of the heart tube. 2. Describe the formation of different chambers of the heart. 3. Understand and describe the establishment of fetal circulation and its hemodynamics and subsequent cardiovascular changes that take place after birth. 4. Describe and understand causes of major congenital malformation incurred during these developmental stages and their clinical implications.
6	Organization of CVS (Physiology)	<ol style="list-style-type: none"> 1. Describe the systemic and pulmonary circulations and their differences. 2. Explain the functional parts of CVS. 3. Discuss blood volumes and pressure in different parts of CVS. 4. Describe the blood velocity and flow through different parts of CVS and its relation to cross-sectional area. 5. Discuss the basic functions of CVS
7	Histology of the myocardium and blood vessels (Anatomy)	<ol style="list-style-type: none"> 1. Describe the microscopic structure of the cardiac muscle and the histological appearance of the intercalated discs and Purkinje fibers. 2. Describe the histological features of Endocardium, and Epicardium. 3. Describe the ultrastructure of the heart skeleton. 4. Describe the histological appearance of arteries and veins and their differences. 5. Describe the ultrastructural features of different types of capillaries.

8	Surface anatomy of the CVS (Anatomy)	<ol style="list-style-type: none"> 1. Describe the surface landmarks of the heart. 2. Describe the surface anatomy of great vessels entering and leaving the heart. 3. Describe the surface markings of heart valves and ideal sites for their auscultation. 4. Describe the surface markings of Peripheral and central pulses that are commonly used for palpation.
9	Physiology of cardiac muscle (Physiology)	<ol style="list-style-type: none"> 1. Discuss the cardiac conductive system and its function. 2. Describe the action potential of the cardiac muscle and its components. 3. Define the refractory period and the excitation-contraction coupling. 4. Discuss the control of excitation and conduction of the heart.
10	ECG (Physiology)	<ol style="list-style-type: none"> 1. Identify waves of ECG and the cause of each. 2. Define the normal intervals and segments, PR and QT interval. PR and ST segment. 3. Discuss the bipolar and unipolar leads and their locations. 4. Discuss the bipolar limb lead and the cardiac axis.
11	Cardiac arrhythmia (Physiology)	<ol style="list-style-type: none"> 1. Define different ectopic foci of excitation and the mechanism of re-entry phenomena. 2. Describe different types of arrhythmia and the ECG appearance in each type. Atrial fibrillation, atrial flutter, supraventricular tachycardia, ventricular tachycardia and ventricular fibrillation. 3. Discuss different types of conduction block. Incomplete (first and second degree) and complete heart block.
12	Antiarrhythmic drugs (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the main features of the major groups of antiarrhythmic drugs. 2. Describe mechanism of action of each group. 3. Understand Pharmacokinetics, clinical uses and major toxic effects of the drugs used in the treatment of arrhythmias.
13	Cardiac cycle (Physiology)	<ol style="list-style-type: none"> 1. Identify the systolic and diastolic period. 2. Discuss the changes of pressure and volumes in left ventricle, left atrium and the aorta during cardiac cycle. 3. Explain the meaning of isovolumic contraction, period of ejection and isovolumic relaxation. 4. Discuss the volume-pressure relationship in the left ventricle. 5. Explain the development of first and second heart sounds.
14	Cardiac Output & Its regulation (Physiology)	<ol style="list-style-type: none"> 1. Define the cardiac output and cardiac index. 2. Discuss the role of venous return and cardiac reserve and their effect on cardiac output. 3. Describe the role of right atrial pressure and mean circulatory filling pressure. 4. Study the effect of increased sympathetic activity and blood volume on cardiac output. 5. Study the methods for measurement of cardiac output.
15	Pumping of the heart (Physiology)	<ol style="list-style-type: none"> 1. Discuss the intrinsic and extrinsic factors that affect cardiac pumping. 2. Explain the Frank-Starling mechanism. 3. Describe the effect of autonomic nervous system on the heart pumping. 4. Describe the effect of K^+ and Ca^{++} on the heart function. 5. Discuss the energy and oxygen utilization of the heart.
16	Metabolism in the cardiac muscle under physiological and pathological conditions (Biochemistry)	<ol style="list-style-type: none"> 1. Understand the major sources of energy for the cardiac muscle. 2. Discuss ketone body synthesis and utilization during starvation. 3. Discuss the specificity of lactate metabolism in hypoxic heart muscle. 4. Discuss the specificity of metabolism of the cardiac muscle under pathological conditions (diabetes).

17	Microbiology of carditis (Pathology)	<ol style="list-style-type: none"> 1. Understand the characteristic of microorganisms that cause infection of the cardiovascular system: their pathogenicity and methods of identification. 2. Understand the role of streptococcus viridians in endocarditis. 3. Understand the role of streptococcus pyogenes in rheumatic fever.
18	Valvular heart disease. Rheumatic fever and Rheumatic heart disease I (Pathology)	<ol style="list-style-type: none"> 1. To know the main features of rheumatic fever (RF) 2. To discuss the etiology and pathogenesis of RF. 3. To be familiar with the pathognomonic lesion of RF & rheumatic heart disease (RHD). 4. To describe the changes in the heart and other organs in RF. 5. To describe the chronic sequelae of RHD.
19	Endocarditis Myocarditis (Pathology)	<ol style="list-style-type: none"> 1. To know the different types of endocarditis. 2. To classify infective endocarditis. 3. To discuss the pathogenesis and list organisms causing endocarditis. 4. To compare and contrast acute & subacute bacterial endocarditis. 5. To list the possible complications of bacterial endocarditis. 6. To describe briefly Marantic & Libman-Sacks endocarditis.
20	Cardiomyopathy- Pericardium and cardiac tumors (Pathology)	<ol style="list-style-type: none"> 1. To list the major etiologic factors of myocarditis. 2. To discuss briefly the main features and effects of the main types of cardiomyopathies. 3. To classify pericarditis according to type of exudate. 4. To describe the pathology of the common types of heart tumors.
21	Cardiac enzymes and other protein markers (Biochemistry)	<ol style="list-style-type: none"> 1. Discuss the role of cardiac enzymes CK, LDH and AST in the diagnosis of heart disease. 2. Discuss the role of myoglobin, troponin, natriuretic peptides and D-dimers in the diagnosis of cardiovascular disease.
22	Blood vessels I- Arterial system (Anatomy)	<ol style="list-style-type: none"> 1. Describe locations and branches of the ascending aorta and arch of aorta. 2. Describe locations of arteries in the region of the head and neck and their immediate relations. 3. Describe locations of arteries in the region of the thorax and their immediate relations. 4. Describe locations of arteries in the abdomen and pelvis with their immediate relations. 5. Describe locations of branches and continuation of the subclavian artery into the upper limb and their immediate relations. 6. Describe locations of branches and continuation of external and internal iliac arteries into the lower limb and their immediate relations.
23	Blood vessels II- Venous system (Anatomy)	<ol style="list-style-type: none"> 1. Describe the Caval system (course and relations of superior and inferior vena cava). 2. Describe tributaries of the superior vena cava draining the head, neck and upper limbs. 3. Describe tributaries of the inferior vena cava draining the abdomen, pelvis and lower limbs. 4. Describe the Azygous system and its drainage area. 5. Describe the important surface landmarks of major veins from clinical point of view. 6. Discuss the principle of function of muscular venous pump and their location in the human body. 7. Describe the portal venous system. 8. Describe Cavo-Caval and porto-Caval anastomosis.
24	Hemodynamic I (Physiology)	<ol style="list-style-type: none"> 1. Study relationship between pressure, flow and resistance. 2. Discuss laminar and turbulent blood flow. 3. Understand methods for measurement of blood flow. 4. Define blood pressure and its standard unit. 5. Discuss resistance to blood flow, peripheral and pulmonary resistance and the effect of hematocrit on vascular resistance.

25	HemodynamicII (Physiology)	<ol style="list-style-type: none"> 1. Describevasculardistensibilityanditsdifferenceinarteriesand veins. 2. StudyandunderstandLaplacelaw. 3. Discussvascularcomplianceanddelaycompliance. 4. Describearterialpressurepulsationandtransmissionofpressure pulsestotheperipheralarteries. 5. Discussfunctionoftheveins,venouspressure,venousresistance, venousvalveandvenouspump. 6. Definethebloodvenousreservoirandtheirfunction.
26	Developmentofthevascularsystem (Anatomy)	<ol style="list-style-type: none"> 1. Describetheformationofdorsalaorta. 2. Describetheformationofaorticarchesandtheirfate. 3. Revisetheprocessoftransformationoffetalintoadultcirculationand themajorchangesthatoccur. 4. Describemajorcongenitalmalformationsincurredduringthesestages andtheirclinicalimplications.
27	Bloodpressure (Physiology)	<ol style="list-style-type: none"> 1. Definethebloodpressureduringssystemole,diastoleandthepulse pressure. 2. Definemeanarterialbloodpressure,circulatoryfillingpressure,and centralvenouspressure. 3. Explainthehydrostaticeffectonthebloodpressureindifferentparts ofCVSduringdifferentpositions. 4. Discussmethodsofbloodpressuremeasurements.
28	BloodpressureregulationI (Physiology)	<ol style="list-style-type: none"> 1. Discussthemechanismofthenervousregulation(acute)ofBP. 2. Explaintheroleofautonomicnervoussystem(vasoconstrictortone) inBPregulation. 3. Describetherflexmechanismsformaintainingnormalpressure,role ofbaroreceptors,chemoreceptorsandlow-pressureceptors. 4. Discusscentralnervoussystemischemicresponsefactorin regulatingarterialpressure
29	BloodpressureregulationII (Physiology)	<ol style="list-style-type: none"> 1. Discussthelong-termmechanismforregulationofbloodpressure. 2. Explaintherenaloutputcurve. 3. Discusstherelationshipbetweenfluidintakeandrenaloutputand bodyfluidvolume,autoregulation. 4. DiscusstheroleofRenin-angiotensinsysteminregulationofblood pressure. 5. Todiscusstheroleofaldosteroneinbloodpressureregulation
30	Microcirculation (Physiology)	<ol style="list-style-type: none"> 1. Describe theflowof blood to capillaries andtheeffectof pre-capillarysphincter. 2. Discusstheexchangeof differentsubstancesbetweenblood and interstitialfluidandfactorsthat affectthisexchange. 3. Identifytheprimaryforces thatcontrol fluidmovementthrough capillarymembrane. 4. Discusstheformationoflymphandlymphflow. 5. Describefactorsthatregulateymphflowanddevelopmentofedema.
31+ 32	Vasculitis(1+2) (Pathology)	<ol style="list-style-type: none"> 1. Todefinevasculitis&listthepossiblecausesofthiscondition.Todisc ussthemechanismofvasculitis. 2. Tounderstandtherelationbetween,Antineutrophilcytoplasmicantib ody(ANCA)andvasculitis. 3. Toclassifyvasculitis. 4. Todescribethefeaturesofthefollowingtypesofvasculitis:A- Polyarteritisnodosa. 5. B-Wegnersgranulomatosis. 6. C-Giantcellarteritis. 7. D- Microscopicpolyangitis, 8. E- Thromboangitisobliteranse. 9. F-Kawasakidisease.

33	Blood flow to the tissue (Physiology)	<ol style="list-style-type: none"> 1. Describe the local long mechanism that control blood flow to tissues, including acute and long term control. 2. Discuss the metabolic and myogenic theory for control of blood flow. 3. Discuss Autoregulation of the local blood flow with different levels of blood pressure. 4. Explain the mechanism of endothelial deriving relaxing factor (EDRF), the nitric oxide (NO). 5. Discuss the changes that can develop in long-term regulation, including tissue vascularity, angiogenesis and collateral circulation. 6. Discuss humoral regulation of blood flow, by vasoconstrictor and vasodilator agents.
34	Plasma lipoproteins and cholesterol II (Biochemistry)	<ol style="list-style-type: none"> 1. Discuss Cholesterol metabolism and its regulation 2. Discuss triacylglycerol metabolism 3. Discuss the lipoprotein structural features and types. 4. Understand important laboratory tests of blood lipids and lipoproteins.
35	Plasma lipoproteins and cholesterol III (Biochemistry)	<ol style="list-style-type: none"> 1. Discuss the metabolism of blood lipoproteins 2. Understand the role of blood lipids in atherosclerosis 3. Describe various types of hyperlipidemias.
36	Arteriosclerosis Atherosclerosis (I) (Pathology)	<ol style="list-style-type: none"> 1. To define the term arteriosclerosis. 2. To list the three morphologic variants of arteriosclerosis. 3. To describe the main pathological features and disease associations of: medial calcification, hyaline & hyperplastic arteriosclerosis. 4. To define the term atherosclerosis (AS). 5. To describe the gross & histological features of AS. 6. To list the complications and effects of atheromatous plaque.
37	Atherosclerosis (II) Aortic aneurysms (Pathology)	<ol style="list-style-type: none"> 1. To list the risk factors associated with atherosclerosis. 2. To understand the links between atherosclerosis and hypercholesterolemia. 3. To outline the different theories proposed for the pathogenesis of AS, with special emphasis on response to injury hypothesis. 4. To recognize the precursor lesions of AS. 5. To define aneurysm and list its types. 6. To know the possible effects of thoracic & abdominal aneurysms. 7. To discuss the Pathology of syphilitic aortitis and its effects on the aorta and the art. 8. To define the term dissecting hematoma (dissecting aneurysm) 9. To discuss the etiology, mechanism and possible outcome of dissecting hematoma.
38	Hypertension (Physiology)	<ol style="list-style-type: none"> 1. Define hypertension. 2. Discuss the relationship between pressure, volume and peripheral resistance, and study the mechanism of development of hypertension. 3. Discuss essential hypertension and its mechanism of development. 4. Aetiology of secondary hypertension (renal artery stenosis, coarctation of aorta, kidney disease, aldosteronism and Cushing's syndrome). 5. Complication of hypertension on the human body.

39	Antihypertensive drugs I (Pharmacology)	<ol style="list-style-type: none"> 1. List the major groups of drugs used in the treatment of hypertension and give an example in each group. 2. Describe the values of diuretics used in the treatment of hypertension. 3. Describe the values of centrally acting antihypertensive drugs, their indications and adverse effects. 4. Describe the values of adrenoceptor agents in the treatment of hypertension. 5. List the major indications, contraindications, pharmacokinetics and adverse effects of commonly used adrenoceptor agents.
40	Antihypertensive drugs II (Pharmacology)	<ol style="list-style-type: none"> 1. Understand the role of peripheral vasodilators in the treatment of hypertension. 2. List the most commonly used vasodilator drugs. 3. Understand the pharmacokinetics, indications, contraindications and adverse effects of commonly used vasodilators. 4. Describe the role and mechanism of action of angiotensin receptor blocking agents and give an example of these drugs, their pharmacokinetics and adverse effects. 5. Describe the role of angiotensin converting enzyme inhibitors (ACEI) and give an example of commonly used drugs, their pharmacokinetics, indications, contraindications and adverse effects.
41	Epidemiology of Cardiovascular disease (CVD) (Public Health)	<ol style="list-style-type: none"> 1. Define CVD. 2. Understand Mortality and morbidity distribution of the CVD 3. Appreciate the time trend of CVD disease worldwide. 4. Identify non-modifiable and modifiable CVD risk factors. 5. Understand the findings reported by Framingham study.
42	Cardiovascular disease risk factors (cont.) (Public Health)	<ol style="list-style-type: none"> 1. Describe the physical and behavioral CVD risk factors. 2. Describe the psychosocial predictors of CVD. 3. Appreciate the Alameda study findings of CVD-related risk factors.
43	Hyperlipidemia (Pharmacology)	<ol style="list-style-type: none"> 1. Define the therapeutic strategies for the treatment of hyperlipidemia. 2. Understand the indications to use anti-hyperlipidemic drugs. 3. Classify the drugs used in the treatment of hyperlipidemia. 4. Understand the mechanism of action of HMG-CoA reductase inhibitors, their values, indications, contraindications, adverse effects and give an example of commonly used drugs in this group. 5. Describe the mechanism of actions, clinical uses and toxicity of fibrinolytic derivatives. 6. Understand the role of drugs, which reduce the fat absorption from GIT (ezetimibe and orlistat).
44	Coronary circulation & venous drainage of the myocardium (Anatomy)	<ol style="list-style-type: none"> 1. Describe the origin of left and right coronary arteries and their course, branches and distribution. 2. Describe sites of anastomosis between branches of coronary arteries. 3. Describe the normal variation in the course of the coronary arteries and their branches. 4. Describe venous drainage of the heart and cardiac veins (their names, location and drainage areas). 5. Describe the location and termination of the coronary sinus and its tributaries.

45	Coronary circulations (Physiology)	<ol style="list-style-type: none"> 1. Explain normal coronary blood flow during systole and diastole to different parts of the myocardium. 2. Discuss the local factors for control of coronary blood flow, local metabolism as primary factor and the oxygen demand. 3. Describe the effect of autonomic nervous system on coronary arteries, role of Alpha and Beta-receptors. 4. Define ischemic heart disease, the cause of cardiac pain and the mechanism of collateral circulation. 5. Diagnosis of Coronary artery disease, angina pectoris and Myocardial infarction.
46	Ischemic heart disease (IHD) I (Pathology)	<ol style="list-style-type: none"> 1. To define the term IHD. 2. To list the syndromes associated with IHD. 3. To understand the pathogenesis of IHD. 4. To correlate the type of angina pectoris with the pathology of coronary arteries. 5. To describe the pathology of myocardial infarction (MI) including: types, gross, histology and sites.

47	Ischemic heart disease (IHD) II Hypertensive heart disease (HHD) (Pathology)	<ol style="list-style-type: none"> 1. To outline the main clinical features of MI. 2. To list the possible complications of MI. 3. To describe the main features of chronic ischemic heart disease. 4. To list causes of sudden cardiac death (SCD) and outline the mechanism of SCD. 5. List the criteria of HHD. 6. Describe the gross and histological features of the heart in HHD.
48	Antianginal drugs (Pharmacology)	<ol style="list-style-type: none"> 1. Define the therapeutic strategies for treatment of angina pectoris. List the group of drugs commonly used in the treatment of angina. Classify and describe the pharmacokinetics of nitrates. 2. Understand the mechanism of action of nitrates and their organ-system effects. 3. Describe the clinical uses and method of administration of nitrates. List the major toxic effects of nitrates and nitrites. 4. Understand the role of calcium channel blockers in the treatment of angina. List the most commonly used calcium channel blockers in the treatment of angina with their pharmacokinetics, indications, contraindications and adverse effects. 5. Understand the role of Beta-blockers in the treatment of angina.
49	Exercise (Physiology)	<ol style="list-style-type: none"> 1. Describe the mechanism of blood flow to the skeletal muscle during rest and exercise. 2. Study the circulatory readjustment during exercise. 3. Discuss the mechanism of increasing cardiac output and arterial blood pressure during exercise (stroke volume and heart rate). 4. Discuss the relationship of cardiovascular performance to the level of oxygen consumption during exercise.
50	Prevention and control of CVD (Public Health)	<ol style="list-style-type: none"> 1. Appreciate the differences between Mass Strategy and High Risk Strategy in prevention and control of CVD 2. Understand the benefits and efficiency in screening for CVD risk factors. 3. Get exposed to the North Karelia Project for prevention and control of CVD
51	Varicose veins Tumors of blood vessels (Pathology)	<ol style="list-style-type: none"> 1. To discuss the pathogenesis of varicose veins (VV). 2. To know the different sites where VV can occur 3. To list the sequelae of VV. 4. To know the criteria of differentiation between benign, borderline & malignant blood vessel tumors. 5. To give examples of the different types of tumors.
52	Peripheral Vascular Disease (Vascular Surgery)	<ol style="list-style-type: none"> 1. Definition. 2. Signs and Symptoms

		<ol style="list-style-type: none"> 3. Investigations 4. Management
53	heart failure and Circulatory shock (Physiology)	<ol style="list-style-type: none"> 1. Define heart failure (HF). 2. Discuss the different types of HF. 3. Study the signs and symptoms of HF. 4. Investigations of HF. 5. Causes of HF. 6. Define circulatory shock, and the difference between cardiogenic and hypovolumic shock. 7. Discuss the stages of shock; non-progressive and progressive. 8. Describe sympathetic reflex compensation in shock. 9. Discuss the effects of shock on the human body.
54	Drugs used in the treatment of heart failure (Pharmacology)	<ol style="list-style-type: none"> 1. Understand the therapeutic strategies in congestive cardiac failure. 2. Classify and give examples of digitalis glycosides. 3. Describe the pharmacokinetics of digitalis. 4. Understand the mechanism of action and the effects of digitalis. 5. List the major toxic effects and their treatment of digitalis. 6. Describe the role of diuretics, ACE inhibitors, vasodilators and B1-selective adrenoceptor agonists in the treatment of congestive cardiac failure.
55	Surgical Aspects of Coronary Artery Disease and Valvular Heart Disease (Cardiac Surgery)	<ol style="list-style-type: none"> 1. Indications for Mitral & Aortic valve surgery. 2. Indications for Coronary Artery Bypass Graft (CABG). 3. Complications of cardiac surgery. 4. Recent advances in valvular heart surgery.

a. Practical Laboratory Sessions

#	PRACTICE TITLE	OBJECTIVES
1	Morphological and surface anatomy of the Heart & mediastinum.	<ol style="list-style-type: none"> 1. Describe the normal location and surface markings of the heart, its valves and great vessels. 2. Identify the heart and its great vessels in situ in the cadaver and in cross sections. 3. Appreciate important relations of the heart in the middle mediastinum. 4. Examine external and internal features of the heart including its pericardium in wet specimens and plastic models. 5. Describe location, subdivisions and list different parts and contents of the mediastinum. 6. Identify images of the heart and its blood supply in plain chest X-ray, angiograms and CT scans. 7. Revisit the normal developmental embryology of the heart and its great vessels and recall congenital abnormalities that may result if something goes wrong.
2	ECG	<ol style="list-style-type: none"> 1. Explain the differences between Unipolar and bipolar leads 2. To locate the position of different bipolar and unipolar leads. 3. To be familiar with ECG machine and how to record the ECG. 4. To identify different waves, intervals and segments of the ECG and the shapes and amplitude of each. 5. To understand the methods of calculation of the heart rate and the cardiac axis from the recording ECG.

3	Morphologicalandsurfaceanatomy ofbloodvessels- Arterialandvenoussystem	<ol style="list-style-type: none"> 1. Identifymainarteriesandveinsandtheirbranchesinthethorax upperlimbandlowerlimb 2. Identifymainarteriesandveinsintheheadand neckandtheirbranchesandimportantrelations 3. Identifymainarteriesandveinsintheabdomenandtheirbranchesandim portantrelations. 4. Study andidentifytheabove arteries in angiogramsandcrosssections. 5. Onthelivingsubjectlocateandfeeltheimportantpulsesintheaboveregions(commoncarotid,superficialtemporal,subclavian,abdominalaortaaxillary ,brachial,radial,ulnar,femoral,popliteal,dorsalpedalandposteriortibial)
4	PathologyoftheHeart-I	<ol style="list-style-type: none"> 1. Torecognizethegross&histologicalappearanceofrecent&oldMI. 2. ToseeexamplesofmorphologicalcomplicationsofMI. 3. TobeabletorecognizethepathognomoniclesionofRHD. 4. ToidentifythegrosspathologyofRheumaticvalvularlesions.
5	HistologyoftheHeartandbloodvess els.	<ol style="list-style-type: none"> 1. Examinethedetailedmicroscopicstructureofthecardiac muscle. 2. Examine,compareandunderstandthemicrosopicstructureofwallsofdiffer entcaliberbloodvessels. 3. Examineandstudytheultrastructureofbloodcapillaries andsinusoidsbytheaidofelectronmicrographs.
6	Bloodpressureandheartsounds	<ol style="list-style-type: none"> 1. Todefinethebloodpressureinsystoleanddiastole. 2. Toexplainthemethodsofmeasurementofbloodpressure(pal pationandauscultation)duringsystoleanddiastole. 3. ExplainthemechanismofdevelopmentofKortkoffsoundsduringmea surementofbloodpressure. 4. Todiscussthe differenceofpressurevaluesindifferentpartsofthebodydu ringdifferentposition. 5. TodiscussthecauseofheartsoundsandtheirrelationtotheECG. 6. Toidentifythelocationofdifferentregiononthechestwalltohear themaximalintensityofthecomponentofeachheartsound. 7. DefineHeartMurmur. 8. Explainthemechanismofdevelopmentofheartmurmur. 9. Discussdifferenttypesofheartmurmur.
7	PathologyoftheHeart- IIandbloodvessels	<ol style="list-style-type: none"> 1. Torecognizedifferentformsofendocarditisgrossly. 2. Tolookatthethreedifferenttypesofcardiomyopathiesgrossly. 3. Toidentifythemorecommonformsofcongenitalheartdiseases. 4. Identifythegrossandmicroscopicfeaturesofarteriosclerosis 5. Studyhistologicalfeaturesofvasculitisandcommontypesofbloodvesse ltumours.
8	Effectsofbetablockersandcigarett eonthe cardio-vascularsystem	<ol style="list-style-type: none"> 1. Tounderstandtheeffectsofbetaadrenoceptordrugsonthebloodpressu reandpulse. 2. TobeabletomeasuretheBPandpulseduringexercise. 3. TorecognizethedifferencesbetweenBPandpulseduring exercisein peoplereceivingbetablockers 4. Tobeabletoadvicethestakingbetablockerswhatto dotominimizeitsadverseeffects. 5. TounderstandthepharmacologicaleffectsofcigarettesmokingonBPandpu lse. 6. MeasuretheBPandpulseaftersmokingonecigarette.

C. Seminars.

- 1) Hypertension
- 2) Ischemicheartdiseaseandheartfailure

D. AssessmentandEvaluation:

	EXAMFORMAT	WEIGHT(%)
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FIRSTEXAM	Written	40%
SECONDIN-COURSEEXAM	Theory/Practical	14%
	Discussion	6%
FINALEXAM	Written	40%

CVSWEEK1

TIME&DATE		SUN	MON	TUE	WED	THU
8:15-9:05	Science Hall 10	Introductory Case Presentation on for CVS (Multidisciplinary) ALL(1)	Organization of CVS (Physiology)(3)	Heart chambers, Heart valves, con- ductive system and innervation of the heart (Anatomy)(6)	Development of The heart (Anatomy)(9)	Cardiac arrhythmia (Physiology)(12)
9:05-10:05		Introductory Case Presentation on for CVS (Multidisciplinary) ALL(2)	Mediastinum & pericardium (Anatomy)(4)	ECG (Physiology)(7)	Surface anatomy of the CVS (Anatomy)(10)	Histology of the myocardium and Blood vessels (Anatomy)(13)
10:05-11:05			Physiology of cardiac muscle (Physiology)(5)	Cardiac cycle (Physiology)(8)	Microbiology of carditis (Microbiology)(11)	Cardiac Output & Its regulation (Physiology)(14)
11:15-2:00 (Lab)				Physiology Lab 1(A1) ECG	Anatomy Lab 1(A1+A2)	Physiology Lab 1(B2) ECG Anatomy Lab 1(C1+C2)
2:15-5:00 (Lab)				Physiology Lab 1(A2) ECG	Physiology Lab 1(B1) ECG	

CVSWEEK3

TIME&DATE		SUN	MON	TUE	WED	THU
9:05-10:05		Bloodpressure (Physiology)(31)	Bloodpressureregulation 2 (Physiology)(34)	PlasmalipoproteinsandCho lesterol(2) (Biochemistry)(37)	AntihypertensivedrugsII (Pharmacology)(40)	Exercise (Physiology)(43)
10:05-11:05		Bloodpressureregulation 1 (Physiology)(32)	Hypertension (Physiology)(35)	AntihypertensivedrugsI (Pharmacology)(38)	Cardiacenzymesandotherpro tiensmarkers (Biochemistry)(41)	Ischemicheartdisease(IHD)I (Pathology)(44)
11:15-2:00 (Lab)		PhysiologyLab2(D1+D2)BP PathologyLab1(E1+E2)Anat omyLab2(B1+B2)	PhysiologyLab2(E1)BP PathologyLab1(D1+D2)An atomyLab2(A1+A2)	PhysiologyLab2(E2)BP PathologyLab2(A1+A2)An atomyLab2(C1+C2)	PathologyLab2(B1+B2)An atomyLab3(A1+A2)Physio logyLab 2(C1)BP	PathologyLab2(C1+C2)An atomyLab3(B1+B2)
2:15-5:00 (Lab)		Pharma.Lab1(A1+A2)	PhysiologyLab2(C2)BP Pharma.Lab2(B1+B2)	Pharma.(C1+C2)Physiolo gyLab2(A1)BP	Pharma.Lab1(D1+D2)Phys iologyLab 2 (A2)BP	Pharma.Lab(E1+E2)

CVSWEEK4

TIME&DATE		SUN	MON	TUE	WED	THU
8:15-9:05	ScienceHall()	Cardiovascular disease risk factors (Comm.Medicine)(45)	Coronary circulations & CAD (Physiology)(48)	Circulatory shock and heart failure (Physiology)(51)	Peripheral Vascular Disease (Vascular Surgery)(54)	SEMINAR
9:05-10:05		IHD(2)& Hypertensive Heart Disease (Pathology)(46)	Varicose veins and pathology of lymphatics and tumours of blood vessels (Pathology)(49)	Drugs used in the treatment of heart failure (Pharmacology)(52)	Surgical Aspects of Coronary Artery Disease and Valvular Heart Disease (Cardiac Surgery)(55)	SEMINAR
10:05-11:05		Prevention and Control of CVD (Comm.Medicine)(47)	Antianginal drugs (Pharmacology)(50)	Drugs used in hyperlipidaemia (Pharmacology)(53)	(56)	
11:15-2:00 (Lab)		Pathology Lab 2(D1+D2) Anatomy Lab 3(C1+C2) Physiology Lab 2 (B1+B2) BP	Pathology Lab 2(E1+E2) Anatomy Lab 3(D1+D2)	Anatomy Lab 3(E1+E2)		
2:15-5:00 (Lab)						

WEEK 5

TIME&DATE		SUN	MON	TUE	WED	THU
8:15-9:05	ScienceHall 10	SEMINAR	SEMINAR			INCOURSEEXAMINATION
9:05-10:05		SEMINAR	SEMINAR		SELFLE ARNING	
10:05-11:05						
11:15-2:00 (Lab)						
2:15-5:00 (Lab)						

Weekly Teaching activities:**Summary of the teaching activities in the CVS**

Department	#of Lectures	#of Practical	#of Seminars 2 subjects All (30) (15) groups
Anatomy	9	2+1 Histology	0
Physiology	18	2	0
Biochemistry	4	0	0
Pathology	10	2	0
Microbiology	1	0	0
Pharmacology	6	1	0
Public Health	3	0	0
Multidisciplinary	2	0	0
Peripheral Vascular disease	1		
Cardiac Surgery	1		
Total	55	8	30

3- Teaching and learning methods:**METHODS USED:**

- Lectures
- Discussions
- Practical classes
- Multidisciplinary (Paediatrics & Medicine) lectures

4- Student Assessment methods:**4-A) ATTENDANCE CRITERIA:**

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

4-B) Assessment Tools:

Exam	Day	Date
Practical	According to the group	
Final- Theory	To be decided by Registry office.	

4-C) Weighting System:

Examination	Marks allocated
Final exam:	
k- Written	250
l- Practical	50
Total	300

4-D) Examinationdescription:

Examination	Description
Finalexam: k- Written	□ select(MCQs),Shortessay,cases,complete, crossmatching
l- Practical	

F. Recommended Text Books and Atlases:

1- Anatomy:

- Clinical Anatomy for Medical Students. By R.S. Snell, 8th Edition, 2008.
- Grants Atlas of Anatomy, 12th edition, 2009.
- Basic Histology. By L. Carlos Junqueira, 12th edition, 2010.
- Before we are born. By K.L.Morre and T.V.N.Persaud, 7th edition, 2008.

2- Physiology:

- Textbook of Medical physiology. By Guyton and Hall, 11th edition, 2006.

3- Biochemistry:

- Supplementary Departmental Handouts.

4- Pharmacology:

- Lippincott's Illustrated Reviews: Pharmacology, 4th edition, 2009.

5- Pathology:

- Basic Pathology. By Kumar, Cotran and Robbins, 8th edition, 2009.
- Supplementary. Departmental Handouts.

6- Microbiology:

- Medical Microbiology. An Introduction to infectious Diseases. By Sheries, 5th edition, 2010. .

7- Public Health:

- Supplementary Departmental Handouts.

8- Cardiology and Cardiovascular Surgery :

- Supplementary Departmental Handouts.



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine**

**Course Name: Hematopoietic and Lymphoid System (HLS)
Code: MED 222**

A) Basic Information:

1. Course title: Hematopoietic and Lymphoid System (HLS)
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** Multidisciplinary
4. **Academic year:** second year second semester
5. **Date of specification approval:**
6. **Internal Evaluator:**
7. **Allocated marks:** 300 marks.
8. **Course duration:** 6 weeks of teaching.
9. **Credit hours:** 6
10. **Teaching Approaches:** Integrated System Block with PBL

B) Professional Information:

1- Overall Aim of the Course:

Upon successful completion of this course students should be able to:

1. Describe the constituents of blood, their origin and function.
2. Discuss the structure and function of the lymphoreticular system.
3. Describe the important aspects of hemoglobin genetics and abnormal hemoglobin synthesis.
4. Understand the basic classification systems of anemias, their laboratory and clinical features, public health aspects, and their management.
5. Understand epidemiological and social distribution of nutritional anemia in developing countries and in Jordan.
6. Elaborate on main causes of nutritional anemia and its associated factors.
7. Highlight preventive and therapeutic measures to combat nutritional anemia.
8. Understand the classification of neoplastic diseases of hematopoietic cells, methods for their diagnosis and their natural history and general guidelines for their management.
9. Describe the regulatory mechanisms of normal hemostasis, abnormalities that lead to bleeding disorders, pathologic aspects that cause thrombotic disorders and how are these conditions treated?
10. Understand causes of toxemia, its diagnosis, treatment and prevention.
11. Describe the biochemical basis of porphyria.

2. Course contents:

A. Theory

#	Lecture Title	Lecture Objectives
1	Introduction to Hematopoietic system (multidisciplinary)	<ol style="list-style-type: none">1. Understand the general outline of the module.2. Be familiar with the modalities of teaching throughout the course.3. Acknowledge the important relation between normal and abnormal structure and function.4. Appreciate the importance of basic sciences in clinical application.
2	Histology of formed blood elements I (Anatomy)	<ol style="list-style-type: none">1. List blood components.2. Classify formed elements of blood.3. Discuss the scientific basis of the above classification.4. Describe the basic structure of erythrocytes and criteria of their identification.5. List the components of cellular granulocytes.
3	Blood: composition, function, blood volume & viscosity (Physiology)	<ol style="list-style-type: none">1. Describe the composition of blood.2. Understand the functions of blood.3. Understand factors affecting viscosity of blood.4. Understand the principle of linear blood flow.
4	Metabolism of vitamin B12 and folic acid (Biochemistry)	<ol style="list-style-type: none">1. Describe the structure and biochemical importance of Vit B122. Describe the structure and biochemical importance of folic acid
5	Physiological requirements for hematopoiesis process (Physiology)	<ol style="list-style-type: none">1. describe the food sources, requirement, absorption, distribution and excretion of iron, vitamin B12, and folic acid2. describe the role of iron, vitamin B12, and folic acid in hematopoiesis3. describe the clinical consequences of iron, vitamin B12, and folic acid deficiency
6	Hematopoiesis: Pre & postnatal (Anatomy)	<ol style="list-style-type: none">1. Name organs responsible for hematopoiesis in the fetus.2. List the developmental stages of hematopoiesis both prenatally and postnatally.
7	Erythropoiesis, Myelopoiesis & Thrombopoiesis (Anatomy)	<ol style="list-style-type: none">1. Outline the major steps of postnatal development of blood formed elements (erythropoiesis, granulopoiesis, monocytopoiesis and megakaryopoiesis).2. Identify characteristic features of these cells.
8	RBCs: Characteristics & functions (Physiology)	<ol style="list-style-type: none">1. Describe RBCs structure & its structure function relationship.2. Understand the different functions of RBCs.3. Understand structure function relationship of RBC cell membrane like fluidity.4. Identify the physiological factors that affect RBCs count.5. Understand the lifespan of RBCs & its relationship to blood donation.6. Understand the principle of complete blood cell count (CBC).
9	WBCs: Characteristics & functions (Physiology)	<ol style="list-style-type: none">1. Recognize the different structural types of WBCs & their physiological functions.2. Define the lifespan & the physiological implication of that3. Differentiate between marginating & circulating pools of WBCs4. Understand the principle behind the total, relative & absolute WBCs count.5. WBCs count.6. Understand how to apply this knowledge in clinical practice.

10	Hemoglobin(Hb):structure,function(Biochemistry)	<ol style="list-style-type: none"> 1. Describe the quaternary structure of hemoglobin, stress on quaternary structure 2. Understand the different chains assembled in Hb. Understand the importance of iron and its form in heme. Understand how Hb is involved in O₂ transport. 3. Understand the factors that affect O₂ binding affinity of Hb.
11	Introduction to Anemias: classification and strategies for diagnosis (Pathology)	<ol style="list-style-type: none"> 1. Name and describe the maturational sequence of erythroid cells in the bone marrow using the terms: proerythroblast, erythroblast, normoblast and reticulocyte. 2. Discuss aplastic anemia with emphasis on its etiology, diagnostic criteria, clinical features and management. 3. Classify myelophthisic anemias. 4. Discuss the role of erythropoietin in hematopoiesis with emphasis on its site of production and target cells. 5. Classify anemias according to pathophysiologic criteria. 6. Classify anemias according to mean corpuscular volume (MCV) and give three examples of each type. 7. Discuss the reticulocyte count, corrected reticulocyte count and diseases associated with high and low numbers.
12+13	Community health aspect of anemia (Comm. Med)	<ol style="list-style-type: none"> 1. Describe epidemiological and social distribution of nutritional anemia in developing countries. 2. Distribution of nutritional anemias by population groups in Jordan. Describe the major nutritional risk factors in the determination of anemias. 3. Highlight preventive and therapeutic measures to combat nutritional anemia
14	Heme and porphyrin metabolism (Biochemistry)	<ol style="list-style-type: none"> 1. Understand the structure of heme and porphyrin. 2. Understand the biosynthesis of heme and porphyrin 3. Understand the degradation process of heme and porphyrin 4. List substances produced by heme destruction and their fate in the body. 5. Understand the basic abnormalities that may result in heme degradation.
15	Globin genes and Molecular biology of globin synthesis & role of iron and heme. (Biochemistry)	<ol style="list-style-type: none"> 1. Understand the organization of globin genes including α and β hagenefamilies. 2. Explain the regulation of globin biosynthesis by iron and other iron related transcription factors 3. Explain the regulation of globin biosynthesis by heme
16	Hemolytic anemias. (Pathology)	<ol style="list-style-type: none"> 1. Describe parameters used to detect hemolysis. 2. Classify hemolytic anemias. 3. Describe immune processes leading to hemolysis with reference to diseases associated with hemolysis.
17	Hemolytic anemias. (Pathology)	<ol style="list-style-type: none"> 1. Discuss the most frequent enzyme defects leading to hemolysis with emphasis on their clinical and laboratory findings. 2. Identify: spherocyte, schistocyte, nucleated RBCs, Heinz bodies, elliptocyte and Howell Jolly bodies. 3. Describe the RBC membrane cytoskeleton with emphasis on hereditary spherocytosis
18	Hemoglobinopathies and hemoglobin electrophoresis (Biochemistry)	<ol style="list-style-type: none"> 1. Identify the structural abnormalities of alpha and beta thalassemia 2. Identify the structural abnormalities of sickle cell anemia (HbS), hemoglobin C disease (HbC) and hemoglobin SC disease (HbSC). 3. Understand the principle behind hemoglobin electrophoresis as a diagnostic tool for hemoglobinopathies. 4. Understand the molecular diagnostic techniques for hemoglobin disorders

19	Molecular Diagnostic Techniques Of Hemoglobin Disorders	<ol style="list-style-type: none"> 1. PCRSSCP 2. PCRDGG 3. PCRHAPLOTYPES 4. PCRRFLP
20	Thalassemias and Hemoglobinopathies (Pathology)	<ol style="list-style-type: none"> 1. List the types of hemoglobin present in normal blood and what's the percentage of each type? 2. For thalassemias syndromes describe the following: <ol style="list-style-type: none"> a. Basic genetic defect b. Red cell morphology c. Clinical manifestations and complications d. Diagnostic procedures 3. For sickle cell disease and trait describe the following: <ol style="list-style-type: none"> a. Basic genetic defect b. Red cell morphology c. Clinical manifestations and complications d. Diagnostic procedures
21+22	Drugs used in anemias I+II (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the normal mechanism of regulation of iron in the body. 2. List the major forms of iron used in the therapy of anemias. 3. List the anemias for which iron supplementation is indicated and those for which it is contraindicated. 4. Describe the acute and chronic toxicity of iron. 5. Describe the role of B12 and folic acid in treatment of megaloblastic anemia and the hazards involved in the use of folic acid as a sole therapy of megaloblastic anemia. 6. Describe the major bone marrow colony stimulating factors.
23	Physiology of blood coagulation (Physiology)	<ol style="list-style-type: none"> 1. Understand the process and stages (cascade) of blood coagulation and its significance. 2. List and understand the role of factors involved in blood coagulation. 3. Understand the role of serine proteases in the cascade of blood coagulation.
24	General overview of homeostatic process (Physiology)	<ol style="list-style-type: none"> 1. Understand the structure, function & lifespan of platelets. 2. Understand the interaction of platelets, blood vessels and plasma coagulation factors in homeostasis. 3. Understand the role of the liver in normal homeostasis.
25	Congenital Bleeding Disorders and DIC (Pathology)	<ol style="list-style-type: none"> 1. For each of von Willebrand disease, hemophilia A and hemophilia B, describe: <ol style="list-style-type: none"> a. Heritance b. Etiology c. Clinical presentations d. Laboratory findings e. Treatment 2. Understand the correct usage and significance of abnormalities of each of the following: <ol style="list-style-type: none"> a. Prothrombin time (PT) b. Partial thromboplastin time (PTT) c. Bleeding time (BT) d. Platelet count 3. For disseminated intravascular coagulation (DIC), describe: <ol style="list-style-type: none"> a. Etiology b. Clinical presentations and complications c. Laboratory findings d. Histopathology of affected organs

26	Inherited disorders of platelets function Idiopathic thrombocytopenic purpura (ITP) and thrombotic thrombocytopenic purpura (TTP), (Pathology)	<ol style="list-style-type: none"> 1. List the surface glycoproteins of platelets and define their roles. 2. Describe the pathogenesis and laboratory findings of Bernard-Soulier disease and thrombasthenia. 3. Describe the etiology, pathogenesis, clinical findings, laboratory results and patient management of adult and pediatric ITP. 4. Identify the mechanism of neonatal and posttransfusion thrombocytopenia. 5. Describe the clinical findings and laboratory results of TTP.
27	Hypercoagulable disorders (Pathology)	<ol style="list-style-type: none"> 1. Understand the basis for the antithrombotic role of normal endothelium. 2. Describe the action of antithrombin III (ATIII), protein C, and protein S. 3. Explain the pathogenesis of activated protein C (APC) resistance. 4. Cite the most common conditions associated with primary (genetic) and acquired thrombosis.
2/8	Drugs used in coagulation disorders I (Pharmacology)	<ol style="list-style-type: none"> 1. Compare the oral anticoagulants with heparin in terms of their pharmacokinetics, mechanisms, and toxicities. 2. Describe types of anticoagulant drugs, their mechanisms of action, therapeutic uses, adverse effects, drug interaction with other drugs, and contraindications.
29	Drugs used in coagulation disorders II (Pharmacology)	<ol style="list-style-type: none"> 1. Describe types of antiplatelet drugs, their mechanisms of action, therapeutic uses, adverse effects, drug interaction with other drugs, and contraindications. 2. Describe types of thrombolytic and antithrombotic drugs, their mechanisms of action, therapeutic uses, adverse effects, drug interaction with other drugs, and contraindications. 3. Discuss the drugs used to treat disorders of excessive bleeding.
30	Lymphovascular, circulation and drainage and Lymphoid tissue I (Anatomy)	<ol style="list-style-type: none"> 1. Understand the origin and composition of lymph. 2. Explain the circulation of lymph in the body.. 3. Describe the gross anatomy of the following lymphoid organs: <ol style="list-style-type: none"> a. spleen, tonsils, thymus, lymph nodes and mucosa associated b. lymphoid tissue; i.e. (their shape, location, anatomical relations, blood and nerve supply).
31	Salmonella typhi, enteric fever and Brucella (Microbiology)	<p>For each organism:</p> <ol style="list-style-type: none"> 1. Describe the morphology, growth, virulence factors and structure. 2. Explain pathogenesis and clinical manifestations. 3. Explain epidemiology of the disease. 4. Be familiar with the laboratory diagnosis. 5. Be familiar with treatment and prevention.
32	Lymphoid tissue II (Anatomy)	<ol style="list-style-type: none"> 1. Describe and understand the microscopic structure of lymphoid organs, spleen, tonsils, thymus, lymph nodes and mucosa associated lymphoid tissue.
33	Acute Leukemias I (Pathology)	<ol style="list-style-type: none"> 1. Understand the classification of acute leukemias with emphasis on the French-American-British (FAB) system. 2. Define the term "blast". 3. Describe the normal phenotypic changes seen in differentiating Band T lymphocytes with reference to similar changes seen in Acute lymphoblastic leukemia.

34	Acute Leukemias II (Pathology)	<ol style="list-style-type: none"> Describe the clinical presentations, complications and patient management of acute leukemias. Explain how the following tests are used in diagnosing acute leukemias: <ol style="list-style-type: none"> Myeloperoxidase Nonspecific esterase TDT List six chromosomal abnormalities associated with acute leukemias. Identify the oncogenes associated with them and their effects on prognosis.
35	Plasmodium and Babesiosis (Microbiology)	<p>Describe the following:</p> <ol style="list-style-type: none"> Microbiological properties, classification and diseases. Microscopic differences between species, life cycle, epidemiology, and pathophysiology. Clinical presentation, specimen collection, diagnosis, treatment, and prevention.
36+37	Lymph Node Enlargement and Non-Hodgkin Lymphomas (NHL) I & II (Pathology)	<ol style="list-style-type: none"> Understand the general characteristics of NHL, with reference to pathogenesis, classification and procedures used to diagnose them. Describe the grading systems of NHL. Compare the histopathologic, immunologic and clinical features of NHL. List three chromosomal translocations associated with NHL; describe the oncogenes associated with them. Describe the morphology of: <ol style="list-style-type: none"> small lymphocytes small cleaved cells mantle cells immunoblasts prolymphocytes small noncleaved cells lymphoblasts
38	Hodgkin lymphoma (Pathology)	<ol style="list-style-type: none"> Classify Hodgkin lymphoma Describe the morphology of Reed-Sternberg cells and its variants Describe the staging system of Hodgkin lymphoma Understand the main clinical features and main lines of management of Hodgkin lymphoma List the histologic types of Hodgkin disease; lymphoma, their clinical presentations, general guidelines for patient evaluation and management.
39	Yersinia pestis, plague, Q fever, and other rickettsia (Microbiology)	<p>Describe the following:</p> <ol style="list-style-type: none"> General microbiological properties, differences from other Yersinia. Cultural techniques, epidemiology, pathophysiology. Clinical presentation, specimen collection for culture, treatment and prevention.
40	Biochemical basis of porphyria and jaundice in hemolytic anemia (biochemistry)	<ol style="list-style-type: none"> List the enzymatic defects in the biosynthesis pathway that lead to porphyrias. Describe jaundice and bilirubin metabolic pathway defects. Understand bilirubin glucuronyl transferase enzyme and jaundice in newborns.

41	Trypanosomiasis, visceral leishmaniasis and Filariasis (Microbiology)	For each of Trypanosomiasis, leishmaniasis and filariasis, describe the following: <ol style="list-style-type: none">1. Microbiological properties.2. Classification and diseases.3. Microscopic differences between species.4. Lifecycle, epidemiology and specimen collection.5. Pathophysiology and clinical presentation.6. Diagnosis, treatment, and prevention.
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42	Chronic Lymphoproliferative disorders. Plasmacell tumors and monoclonal gammopathies (Pathology)	<ol style="list-style-type: none"> 1. Understand the clinical manifestations, laboratory findings and complications of chronic lymphocytic leukemia (CLL). 2. Describe the morphologic and immunophenotypic characteristics of CLL cells. 3. Describe the clinical manifestations and laboratory findings of: <ol style="list-style-type: none"> a. Hairy cell leukemia b. Large granular lymphatic disorders c. Mycosis fungoides d. Adult T cell leukemia/lymphoma 4. Understand the clinical manifestations, laboratory findings and complications of plasmacell tumors. 5. Define: <ol style="list-style-type: none"> a. Bence Jones proteins b. Monoclonal spike c. M proteins d. Heavy chain disease. e. Waldenstrom's macroglobulinemia.
43	Chronic Myeloproliferative and myelodysplastic syndromes (Pathology)	<ol style="list-style-type: none"> 1. Compare clinical and laboratory findings of: <ol style="list-style-type: none"> a. Chronic myelogenous leukemia b. Polycythemia c. Essential thrombocythemia d. Myelofibrosis with myeloid metaplasia 2. Describe Philadelphia chromosome, its disease association and its significance. 3. Understand the significance of the placental alkaline phosphatase (PLAP) score. 4. Define the terms: <ol style="list-style-type: none"> a. Leukoerythroblastosis b. Leukemoid reaction c. Dyserythropoiesis d. Dysmyelopoiesis e. Dymegakaryopoiesis f. Ringed sideroblasts g. Myelofibrosis 5. List different types of myelodysplastic syndromes.
44	Blood groups (Physiology)	<ol style="list-style-type: none"> 1. Understand the principles of ABO blood group system. 2. Understand the principles of Rh blood group system. 3. Understand the principles of the HLA system.
45	Blood transfusion and transplantation (Medicine)	<ol style="list-style-type: none"> 1. Apply the knowledge given in the blood grouping system in blood transfusion. 2. Apply the knowledge given in the blood grouping system into organ transplantation. 3. Understand how to use this knowledge in the clinical practice.
46+47	Antineoplastic drugs I & II (Pharmacology)	<ol style="list-style-type: none"> 1. Recognize the general principles of cancer therapy. 2. Understand the three main lines of cancer therapy. 3. Understand methods of administration of cytotoxic drugs and the rules for combination therapy. 4. Understand the terms: adjuvant therapy, growth fraction and cell cycle. 5. Understand the mode of drug action either phase specific or non-specific. 6. Classify cytotoxic drugs and explain their mechanism of action. 7. Recognize the major adverse effects of cytotoxic drugs. 8. List the common drugs, which have an immunosuppressive effect.

48	Immunosuppressant Agents(Pharmacology)	<ol style="list-style-type: none">1. Classify the objectives of immunosuppressant drugs.2. Explain briefly their mechanism of actions and therapeutic uses.3. 3. Recognize the major adverse effects of the immunosuppressant agents.
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49	EpsteinBarrVirus(EBV)andParvovirusB19(Microbiology)	Describe the following: <ol style="list-style-type: none"> 1. Microbiological properties and diseases. 2. Multiplication strategies, epidemiology, and pathophysiology. 3. Clinical presentation, specimen collection, laboratory diagnosis, treatment, and prevention.
50	Blood culture techniques (Microbiology)	<ol style="list-style-type: none"> 1. Describe aseptic techniques used in blood culture. 2. Describe types of systems involved in the blood culture. 3. Describe different types and constituents of blood culture bottles. 4. Describe cultural and incubational environments.
51+52	Supportive treatment of cancer of HL S I&II	<ol style="list-style-type: none"> 1. Understand what are the different modalities of treatment of cancer: <ul style="list-style-type: none"> • Chemotherapy (adjuvant and neoadjuvant). • Surgery. • Radiotherapy. • Monoclonal antibodies 2. Identify features that put patients at increased risk of complications of treatment. 3. Describe possible complications of chemotherapy and how to prevent and treat such complications.

B). Practical Laboratory Sessions:

Lab#	Lab. Title	Objectives
1	Histology of blood smear and Histology of lymphoid tissue (Anatomy)	<ol style="list-style-type: none"> 1. Review criteria for identifying neutrophils. 2. Examine a blood smear under the light microscope applying the above criteria to decide which cell is a neutrophil. 3. Repeat the same process above in identifying other blood cells: 4. basophils, acidophils, lymphocytes, platelets and RBCs. 5. Review criteria and distinguishing histological features for identifying a lymph node. 6. Examine a cross-section of lymph node under the light microscope applying the above criteria. 7. Repeat the same process above in identifying and examining cross-sections of the spleen, thymus, tonsils and Mucosa Associated Lymphoid Tissues (MALT).
2	Histology of lymphoid tissue (Anatomy)	<ol style="list-style-type: none"> 1. Review criteria and distinguishing histological features for identifying a lymph node. 2. Examine a cross-section of lymph node under the light microscope applying the above criteria. 3. Repeat the same process above in identifying and examining cross-sections of the spleen, thymus, tonsils and Mucosa Associated Lymphoid Tissues (MALT).
3	RBCs & WBC count (Physiology)	<ol style="list-style-type: none"> 1. Introduce the student to the hematology lab. 2. Learn the basic techniques used in counting & the clinical implication of this count.
4	Hb, PCV, RBCs, WBCs, & differential (Physiology)	<ol style="list-style-type: none"> 1. Learn the basic techniques in doing Hb, PCV, & RBCs 2. Understand how to calculate RBC values & their clinical significance 3. Learn the basic techniques of WBCs and differential count. 4. Understand total leukocytic count, the differential leukocytic count & their clinical significance. 5. Learn how to calculate the relative leukocytic count & its clinical significance.

5	Anemiasandleuemias(Pathology)	<p>Identifythemorphologicabnormalitiesofperipheralbloodandbonemarrowin:</p> <ol style="list-style-type: none"> 1. Irondeficiencyanemia 2. Megaloblasticanemia 3. Thalassemias 4. Sicklecellanemia 5. Micoangiopathichemolyticanemia 6. G6PDhemolyticanemia 7. Autoimmunedhemolyticanemia 8. Hereditaryspherocytosis 9. Identify: 10. Lymphoblasts 11. Myeloblasts 12. Promyelocytes 13. Prolymphocytes 14. Auerrods <p>Identifythediagnosticmicroscopicchangesof:</p> <ol style="list-style-type: none"> 1. Acutemyeloidleukemia 2. Acutelymphoblasticleukemia 3. Chronicmyelogenousleukemia 4. Chroniclymphocyticleukemia 5. Hairycellleukemia
6	Lymphnodeenlargementandlymphomas(Pathology)	<p>Identifythemicroscopicmorphologicchangesof:</p> <ol style="list-style-type: none"> 1. Follicularhyperplasia 2. Follicularlymphomas 3. Mantlecelllymphoma 4. Smalllymphocyticlymphoma 5. Largecelllymphoma 6. Hodgkindiseaseanditssubtypes

SmallGroupDiscussionCases:

1. Leukemia
2. Anemia

SelfLearningCases:

1. StemCellTransplantation
2. BleedingDisorders

Summary of the teaching activities in the HL System

Department	#ofLectures	#ofPractical	SmallGroupDiscussion	SelflearningCases
Anatomy	5	2	0	0
Physiology	8	2	0	0
Biochemistry	7	0	0	0
Pathology	14	2	0	0
Microbiology	6	0	0	0
Pharmacology	6	0	0	0
PublicHealth	2	0	0	0
Multidisciplinary	5	0	2	2
Total	53	6	2	2

3- Teaching and learning methods:

METHODS USED:

- Lectures
- Discussions
- Practical classes
- Multidisciplinary (Paediatrics & Medicine) lectures

4- Student Assessment methods:

4-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

4-B) Assessment Tools:

Exam	Day	Date
Practical	According to the group	
Final- Theory	To be decided by Registry office.	

4-C) Weighting System:

Examination	Marks allocated
Final exam:	
m- Written	250
n- Practical	50
Total	300

4-D) Examination description:

Examination	Description
Finalexam: m- Written n- Practical	□ select(MCQs),Shortessay,cases,complete, crossmatching

5. Recommended Text Books and Atlases:

1- Anatomy:

- Clinical Anatomy for Medical Students. By R.S. Snell, 8th Edition, 2008.
- Grants Atlas of Anatomy, 12th edition, 2009.
- Basic Histology. By L. Carlos Junqueira, 12th edition, 2010.
- Before we are born. By K.L. Moore and T.V.N. Persaud, 7th edition, 2008.

2- Physiology:

- Textbook of Medical Physiology. By Guyton and Hall, 11th edition, 2006

3- Biochemistry:

- Supplementary Departmental Handouts.

4- Pharmacology:

- Lippincott's Illustrated Reviews: Pharmacology, 4th edition, 2009.

5- Pathology:

- Basic Pathology. By Kumar, Cotran and Robbins, 8th edition, 2009.
- Supplementary Departmental Handouts.

6- Microbiology:

- Medical Microbiology. An Introduction to Infectious Diseases. By Series, 5th edition, 2010..

7- Public Health:

- Supplementary Departmental Handouts.

8- Cardiology and Cardiovascular Surgery:

- Supplementary Departmental Handouts.



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine**

**Course Name: Respiratory System
Code: MED 223**

A. Basic Information:

1. **Course title:**Respiratory System.
2. **Specialty:**M.B.B.S. program
3. **Department offeringthecourse:**Multidisciplinary
4. **Academic year:**second yearsecond semester
5. **Dateof specification approval:**
6. **InternalEvaluator:**
7. **Allocated marks:** 300marks.
8. **Course duration:** 5weeksof teaching.
9. **Credithours:** 6
10. **Teaching Approaches:**Integrated System Block with PBL

B)ProfessionalInformation:

1- OverallAimof the Course:

By the end of this course, students are expected:

1. To identify and describe structures of respiratory organs, as well as their development, their histology and their blood supply.
2. To describe the mechanics of pulmonary ventilation and the major mechanisms involved in the regulation of respiration.
3. To explain how the respiratory gases are exchanged and carried around the body.
4. To identify various bacteria, viruses, parasites and fungal infections, which infect the respiratory tract and to understand principles of diagnosis, treatment and prevention.
5. To identify and describe the major causes, pathogenesis, morphological changes and complications of various disease processes which affect the respiratory tract.
6. To understand the major pharmacological principles, which provide the basis for the treatment of tuberculosis, cough and bronchial asthma, as well as the pharmacology of anti-histamine drugs.
7. To identify the major risk factors which contribute to occupational diseases of the respiratory system and to understand their epidemiological pattern in the Jordanian community

2. Course contents:

A. Theory:

No.	Lecture title	Lecture Objectives
1 & 2	Introduction to Respiratory System (Multidisciplinary)	<ol style="list-style-type: none">1. Understand the general outline of the RS module.2. Be familiar with the modalities of teaching throughout the course.3. Acknowledge the important relation between normal and abnormal structure and function.4. Appreciate the importance of knowledge of basic medical sciences in clinical application.
3	Overview of Respiratory Anatomy (Anatomy)	<ol style="list-style-type: none">1. Describe the general structures and organs of the respiratory system.2. Compare and relate the structure and function of different parts of the respiratory system.3. Describe and understand the essentials of the respiratory system.4. Describe the anatomical and functional subdivisions of the RS.
4&5	Upper respiratory Tract-I&II (Anatomy)	<ol style="list-style-type: none">1. Describe the structure of nasal cavity including nasal septum.2. Describe the structure of lateral wall of nasal cavity including conchae and meatuses.3. Locate the openings of the paranasal air sinuses and naso-lacrimal duct in the meatuses.4. Describe nasal innervations, blood supply, and its relation to epistaxis.5. Study the structure of nasopharynx and associated openings with their clinical importance.6. Describe the structure of various cartilages and membranes of the larynx.7. Describe muscles of the larynx including their action, nerve and blood supply.8. Describe the structure of vocal cords and the mechanism of voice production and control of air passageway.
6	Pulmonary ventilation (Physiology)	<ol style="list-style-type: none">1. Describe the mechanics of pulmonary ventilation.2. Define pleural pressure, alveolar pressure and transpulmonary pressure3. Describe changes in lung volumes, alveolar pressure, pleural pressure, and trans-pulmonary pressure during normal breathing.4. Define compliance of the lungs.5. Draw compliance diagram of the lungs in a normal person.6. Describe the chemical composition and function of the surfactant.
7&8	Lower respiratory tract, Pleura, Lung and Mediastinum. (Anatomy)	<ol style="list-style-type: none">1. Describe the trachea including its relations and subdivision.2. Define pleura and pleural cavity, and name its parts and recesses.3. Discuss the pleural nerve supply.4. Describe the lungs with their lobes and fissures and surfaces and compare between right and left lungs.5. Make a list of bronchopulmonary segments.6. Describe innervations, blood supply and lymphatic drainage of the lungs.7. Identify different parts and contents of the mediastinum.8. Study the origin, location, course and branches of the internal thoracic artery.9. Define the surface markings of the trachea, lungs and pleura.10. Describe the typical appearance of chest X-ray and CT scan.
9	Pulmonary volumes and capacities (Physiology)	<ol style="list-style-type: none">1. Define spirometry2. Describe the significance of the major volume and capacities that are recorded during normal function test.3. Understand algebraic interrelations among pulmonary values and capacities4. Describe the techniques used to determine functional residual capacity, residual volume and the total lung capacity5. Describe the closing volume6. Define minute respiratory volume.

10	Thoracic cage, wall & respiratory muscles including the diaphragm. (Anatomy)	<ol style="list-style-type: none"> 1. Describe the shape and outline of the thoracic cage including inlet and outlet. 2. Describe the anatomical landmarks of the anterior chest wall. 3. List various structures making the thoracic wall. 4. Make a list of muscles of the thoracic wall including their nerve and blood supply and their actions. 5. List various parts of the thoracic vertebrae and name its characteristic features. 6. Describe the sternum with its joints. 7. Classify ribs, name their various parts and compare them with each other. 8. Define intercostal spaces and discuss their various components including intercostal muscles. 9. Describe the diaphragm, its origin, insertion, function, nerve and blood supply. Study openings in the diaphragm and structures that pass through.
11	Histology of Respiratory Tract (Anatomy)	<ol style="list-style-type: none"> 1. Describe the microscopic structure of the upper respiratory passage including the respiratory mucosa. 2. Correlate the structure and expected function of the different components of the nose and trachea. 3. Study the microscopic structure of the main bronchi and their subdivisions. 4. Study the microscopic structure of the lung parenchyma, and correlate this structure with gas exchange function.
12	Upper respiratory tract infections 1: Group A β -hemolytic streptococci & Haemophilus influenza (Microbiology)	<ol style="list-style-type: none"> 1. Know the anatomical differences between the upper and the lower respiratory tract. 2. Know the normal flora and the pathogens of the respiratory tract. 3. Know the structure of Group A beta hemolytic strep in relationship to virulent factors, pathogenesis, and laboratory diagnosis. 4. Know the diseases caused by this organism, epidemiology, pathogenesis, treatment and prevention. 5. Explain why there is no vaccine for this organism. 6. Describe the morphology and structure of H influenza. 7. Describe the growth and pathogenesis. 8. Explain immunity, transmission and epidemiology. 9. Be familiar with different types of Haemophilus influenza infections. 10. Be familiar with the laboratory diagnosis. 11. Be familiar with the treatment and the prevention.
13	Upper respiratory Tract.II Bordetella pertussis & Corynebacterium diphtheria (Microbiology)	<ol style="list-style-type: none"> 1. Describe the structure, morphology of those organisms and their significance as virulent factors and in laboratory diagnosis. 2. Know the epidemiology, pathogenesis, the mechanism of action of the toxins produced, and the role of lysogenic conversion in virulence. 3. Know the laboratory diagnosis of these organisms, and the significance of the toxin identification rather than the organism itself. 4. Describe the treatment and the antibiotics used for that, prevention and the use of vaccines, their schedule and their possible side effects, and the use of the a cellular component of the vaccine.
14	Pre- and Post-natal Development of RS (Anatomy)	<ol style="list-style-type: none"> 1. Describe the development of nasal cavity. 2. Describe development of the larynx. 3. Describe the development of lungs and bronchi. 4. Describe the development of the diaphragm.

15	Alveolar ventilation (Physiology)	<ol style="list-style-type: none">1. Define alveolar ventilation2. List the factors that determine alveolar ventilation3. Understand differences between anatomic and physiologic dead spaces4. Describe the effect of dead space on alveolar ventilation5. Define rate of alveolar ventilation6. Describe the effects of alveolar ventilation on PCO_2 and PO_2
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16	Pulmonary circulation (Physiology)	<ol style="list-style-type: none"> 1. Compare the pulmonary and systemic circulations listing the main differences between them. 2. Describe bronchial circulation and the concept of physiological shunt 3. Characterize pressures in the pulmonary system 4. Describe blood flow through the lungs and its distribution
17	Upper respiratory tract infections.III: Influenza virus, RSV (Microbiology)	<ol style="list-style-type: none"> 1. Identify the viruses associated with upper respiratory tract, and the significance in relationship to antibiotics abuse. 2. Know the structure of the influenza virus, and relate this into its evasiveness and virulence. 3. Explain the epidemiology in birds, animals and humans, why it causes pandemics, methodology used for naming. 4. Explain the genetics, clinical presentation, pathogenesis, and the role of the immune response, ryes syndrome and significance. 5. Be familiar with the laboratory diagnosis. 6. Be familiar with antiviral drugs used and their mechanism of action of each. 7. Describe the significance of vaccination, the target groups that should be vaccinated, frequency, and side effects.
18	Pulmonary capillary dynamics. (Physiology)	<ol style="list-style-type: none"> 1. Describe the dynamics of capillary exchange of fluid in the lungs and pulmonary interstitial fluid. 2. Characterize the interrelation between interstitial fluid pressure and other pressures in the lung. 3. Define pulmonary edema and the pathophysiological mechanisms. 4. Define pleural effusion and the causing factors
19	Physical principles of gas exchange (Physiology)	<ol style="list-style-type: none"> 1. Appreciate the measurement of partial pressure of gases. 2. Define the factors which affect the rate of gas diffusion 3. Identify the respiratory membrane through which gases diffuse
20	Acid-base balance and the respiratory system as line of defense. (Biochemistry)	<ol style="list-style-type: none"> 1. Describe the bicarbonate buffer system 2. Describe the biochemical changes in Respiratory Acidosis and Alkalosis. 3. Describe the role of Hemoglobin in the buffer system.
21	Biochemistry of oxygen toxicity (Biochemistry)	<ol style="list-style-type: none"> 1. Describe the production of oxygen free radicals intermediates. 2. Discuss the cellular antioxidant defenses pathways.
22	Ventilation-perfusion ratio (Physiology)	<ol style="list-style-type: none"> 1. Define the concept of ventilation – perfusion ratio. 2. Describe the effect of ventilation – perfusion ratio on alveolar gas concentration. 3. Define the concepts of physiologic shunt and physiologic dead space. 4. Characterize the pathophysiology of abnormal ventilation perfusion ratio.
23	Atelectasis and Disturbances of pulmonary circulation. (Pathology)	<ol style="list-style-type: none"> 1. Define Atelectasis, identifying compression & resorption atelectasis, and microatelectasis. 2. Be familiar with the mediastinal shift. 3. Be familiar with pulmonary edema, acute & chronic congestion, Brown induration and hypostatic pneumonia. 4. Be familiar with the causes & effects of thromboembolism & pulmonary infection.
24	Hemoglobin (Biochemistry)	<ol style="list-style-type: none"> 1. Describe the structure and the role of the heme prosthetic group. 2. List the major structural features of the myoglobin protein. 3. List the major hemoglobin present in the adult and the fetus 4. Identify the difference between normal Hb and methemoglobin 5. Identify the site where CO (carbon monoxide) binds 6. Compare the subunit composition of fetal and adult hemoglobin. 7. Appreciate the functional significance of the fetal hemoglobin composition. 8. Distinguish between homotropic and heterotropic effects.

25	Oxygen-hemoglobin dissociation curve shift and its significance (Biochemistry)	<ol style="list-style-type: none"> 1. Contrast the tense and relaxed forms of hemoglobin. 2. Contrast the oxygen binding curves for myoglobin and hemoglobin. 3. Draw an equilibrium that shows the effect of O₂ binding on the relative amounts of tense and relaxed forms. 4. Appreciate the effect of O₂, PBG, CO₂ and Acidity on Hemoglobin structure and oxygen saturation. 5. Appreciate how an increase in PBG helps adapt a person to high altitude. 6. List the factors that shift the oxygen-hemoglobin dissociation curve to the right or left. 7. Discuss the physiological importance of the listed factors on oxygen transport. 8. Describe the shift of oxygen-hemoglobin dissociation curve during exercise.
26	Interpretation arterial blood gases (Medicine)	<ol style="list-style-type: none"> 1. Introduction 2. Acid-Base Status <ol style="list-style-type: none"> a. A Step-wise Approach to Interpretation <ol style="list-style-type: none"> i. Step 1: Examine the pH and compare it to the normal range ii. Step 2: Determine the primary process that led to the change in the pH iii. Step 3: Calculate the serum anion gap (SAG) iv. Step 4: Identify the compensatory process (if one is present) v. Step 5: Determine if a Mixed Acid-Base Disorder is Present b. Generating Differential Diagnoses <ol style="list-style-type: none"> i. Elevated Anion Gap Metabolic Acidosis ii. Normal Anion Gap Metabolic Acidosis (non-gap acidosis) iii. Metabolic Alkalosis iv. Respiratory Acidosis v. Respiratory Alkalosis c. Compare with Old Arterial Blood Gas Results 3. Oxygenation <ol style="list-style-type: none"> a. Assessing the Cause of Hypoxemia b. Assessing the Adequacy of Gas Exchange <ol style="list-style-type: none"> i. The P/F Ratio ii. The AaO₂ Difference c. Special Situations To Be Aware of In Evaluating the PaO₂ on an ABG
27	Lower respiratory tract infections I: Streptococcus pneumonia and other Spp. (Microbiology)	<ol style="list-style-type: none"> 1. Name of microorganisms involved in this group. 2. Describe the classification of pneumonias, and the organisms in each group. 3. Understand the structure of S. pneumonia, and relate this to virulence, pathogenesis, clinical presentation and vaccine development. 4. Describe the laboratory diagnosis and treatment of this organism.
28 & 29	Regulation of respiration: Neural and chemical control. (Physiology)	<ol style="list-style-type: none"> 1. Locate and comment on the function of the dorsal and ventral groups of respiratory neurons, the pneumotoxic center, and the apneustic center in the brain stem. 2. List the effects on respiration that are mediated by the vagus nerves. 3. List the neural factors that affect the activity of respiratory centre 4. Describe abnormal patterns of breathing 5. Describe cough and sneezing reflexes 6. List the specific functions of the respiratory receptors in the carotid body, the aortic body, and in the ventral surface of the medulla oblongata. 7. Describe the effects of arterial PO₂, PCO₂ and PH on alveolar ventilation
30	Lower respiratory tract infections.II: Pseudomonas, Moraxella and Bacillus Anthracis (Microbiology)	<ol style="list-style-type: none"> 1. Describe morphology and structure of the group and relate this to virulence, antibiotics resistance, pathogenesis, clinical presentation, and laboratory diagnosis. 2. Describe their growth, classification, toxins and extracellular products. 3. Explain their pathogenesis, immunity and clinical manifestations. 4. Explain their mode of transmission and epidemiology.

		<ol style="list-style-type: none"> 5. Be familiar with related laboratory diagnosis. Be familiar with their treatment and prevention.
31&32	Obstructive lung disease 1&2 (Pathology)	<ol style="list-style-type: none"> 1. Define obstructive lung disease. 2. Discuss the pathogenesis, pathological features, and possible complications of: Asthma, Chronic bronchitis, Bronchiactasis, and Emphysema. 3. Classify emphysema according to morphologic and etiologic patterns.
33	Lower respiratory tract infections:III Mycoplasma and Legionella (Microbiology)	<ol style="list-style-type: none"> 1. Describe the structure, morphology of the group and relate this to virulence, pathogenesis, and clinical presentation. 2. Explain their pathogenesis, immunity and clinical disease. 3. Explain their mode of transmission and epidemiology. 4. Be familiar with the related laboratory diagnosis. 5. Be familiar with their treatment and prevention.
34&35	Treatment of bronchial asthma 1&2 (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the pathophysiology, etiology and clinical presentations with special emphasis on factors known to provoke the attacks of bronchial asthma. 2. Understand the aims of therapy of bronchial asthma. <p>Be familiar with some examples of drugs that can be used in the treatment of bronchial asthma with their method of administration, mechanisms of action, pharmacokinetics and side effects, such as : Beta agonists, Corticosteroids, Anticholinergic agents, Theophylline, Mast – cell stabilizers, Anti-leukotriens and Others</p>
36	Bronchial asthma treatment guidelines (Medicine)	<ol style="list-style-type: none"> 1. Identify the different pathophysiologic changes targeted in bronchial asthma treatment 2. Review the different medication categories for bronchial asthma 3. Be familiar with the concepts of step up & step down in bronchial asthma treatment 4. Emphasis on the most recent bronchial asthma treatment guidelines in comparison with the old guidelines 5. Overlook of possible future therapies
37&38	Restrictive lung disease 1&2 (Pathology)	<ol style="list-style-type: none"> 1. Define restrictive lung disease. 2. Be familiar with the principles, cause & mechanisms in acute restrictive lung disease identifying Acute Respiratory Distress Syndrome in adults and newborn. 3. Discuss the pathology of idiopathic pulmonary fibrosis. 4. List the commoner cause of pulmonary fibrosis with emphasis on the pathology of Sarcoidosis. 5. Be familiar with causes and pathology of pneumoconiosis. 6. Identify causes and pathology of Asbestosis & Mesothelioma. 7. List the pulmonary hemorrhage syndromes, which may lead to pulmonary fibrosis.
39	Fungal infections (Microbiology)	<ol style="list-style-type: none"> 1. Describe the different fungi involved in the respiratory tract. 2. Describe their structure, clinical classification, and their significance in the disease process. 3. Explain the epidemiology, pathogenesis, clinical presentation, association with the immune status of patients. 4. Know the laboratory diagnosis in medical mycology. 5. Be familiar with the treatment and the antifungal drugs, their mechanism of action and toxicity. 6. Know the preventive measures and the role of the immune system.
40	Acute Pulmonary infections (Pathology)	<ol style="list-style-type: none"> 1. Define pneumonia and pneumonitis. 2. Clarify pneumonias according to etiology & morphological patterns. 3. Compare & contrast bacterial & nonbacterial pneumonias. 4. Outline the events in the resolution of the pneumonic process. 5. List the possible complications of pneumonia. 6. Discuss the causes, morphology and outcome of lung abscess.

41	Chronic Pulmonary infections. (Pathology)	<ol style="list-style-type: none"> 1. Define atypical pneumonia & discuss its etiology & pathology. 2. List the types of fungal & parasitic infections of the lung. 3. Be familiar with lung infections in the immunocompromised host.
42&43	Treatment of respiratory bacterial infections. (Pharmacology)	<ol style="list-style-type: none"> 1. Understand the pharmacokinetics, mechanism of action and adverse effects of drugs commonly used in the treatment of pulmonary bacterial infections.

44	Respiratory infections in children (Pediatrics)	<ol style="list-style-type: none"> 1. Understand different presentation of upper respiratory tract infections in children 2. Identify common upper respiratory tract infections in children
45	Mycobacterium tuberculosis (Microbiology)	<ol style="list-style-type: none"> 1. Describe morphology, structure, staining and cultural characteristics of the organism. 2. Relate the structure to the virulence and pathogenesis of the disease. 3. Explain the range of pathogenicity, resistance, antigenic structure, virulence mechanisms and antimicrobial susceptibility. 4. Be familiar with tuberculosis, routes of infections and reactivation. 5. Explain the immunity, transmission and epidemiology. 6. Describe relevant laboratory diagnosis. 7. Be familiar with anti-tuberculosis drugs, and the multidrug resistance organism 8. Define the immunoprophylaxis, and the vaccines used and their strategy. 9. Know the role of the PPD testing and their significance.
46	Pulmonary TB and chronic pulmonary infections. (Pathology)	<ol style="list-style-type: none"> 1. Describe the pathology of pulmonary primary TB. 2. Describe the pathology of secondary TB 3. Describe the pathology of progressive TB 4. Describe the pathology of chronic pulmonary infections
47	Pneumonias Clinical cases (Medicine)	<ol style="list-style-type: none"> 1. Understand classification of pneumonias 2. Appreciate the clinical presentation of pneumonias in adults
48&49	Lung Tumors 1&2 (Pathology)	<ol style="list-style-type: none"> 1. Describe the etiology of lung cancer. 2. Distinguish between Small Cell Carcinoma & Non Small Cell Carcinoma, and know the clinical & pathologic findings of the various types, together with their prognosis. 3. Be familiar with bronchial carcinoid. 4. Describe paraneoplastic syndromes associated with lung cancer. 5. List other tumors in the lung & know the commonest metastatic tumor. 6. List the diagnostic techniques used for respiratory disease. 7. Be familiar with pleural effusions pneumothorax & pleural tumors. 8. Identify nasal polyp, nasal papilloma & carcinoma. 9. Understand the etiology & pathology of nasopharyngeal carcinoma. 10. Describe laryngeal polyp, papilloma & carcinoma.
50	Histamine and anti-histamines 1 (Pharmacology)	<ol style="list-style-type: none"> 1. Review histamine synthesis, storage, release, actions and the clinical manifestations of histamine shock. 2. Understand the mechanisms of actions of anti-histamine drugs. 3. Be able to classify, understand the pharmacokinetics, uses and adverse effects of anti-histamine drugs.
51	Treatment of tuberculosis (Pharmacology)	<ol style="list-style-type: none"> 1. Understand the concepts of TB treatment with special emphasis on two phases of therapy. 2. Understand the concepts of combination therapy particularly the advantages and disadvantages with special emphasis on TB management. 3. Describe the mechanisms of action, pharmacokinetics, uses and side effects of Isoniazid, Rifampin, and Ethambutol. In addition, pyrazinamide as first line therapy of tuberculosis.
52	Treatment of cough	<ol style="list-style-type: none"> 1. Understand the pathophysiology of cough.

	(Pharmacology)	<ol style="list-style-type: none"> 2. Understand the sites of actions of anti-tussives given example 3. Understand the mechanism of action of mucolytic agents and give examples
53-54	Occupational health of the respiratory system (Community Medicine)	<ol style="list-style-type: none"> 1. Enumerate types of occupational hazards that affect the respiratory system 2. To familiarize the students with different diagnostic techniques used in occupational medicine 3. Understand the process of investigating work related respiratory illness.

B. Practical laboratory session:

Lab No.	Session title	Objectives
1	Histology of Respiratory Tract (Anatomy)	<ol style="list-style-type: none"> 1. Identify the microscopic structure of upper respiratory tract including nasal mucosa, larynx, nasopharynx and trachea. 2. Identify the microscopic structure of lung tissues and parenchyma. 3. Identify the microscopic structure of different parts of bronchial tree. Try to relate structure of each part to its function.
2	Anatomy of URT, thoracic cage, thoracic wall and respiratory muscles. (Anatomy)	<ol style="list-style-type: none"> 1. Identify different parts of the nose: nasal cavity, nasal septum and nasal walls including conchae and meatuses with associated openings. 2. Identify different parts of the laryngeal skeleton and membranes including vocal folds and cords. 3. Identify different parts of the laryngeal cavity: inlet, ventricle, infraglottic space and rima glottidis. 4. Identify different muscles acting on inlet of larynx (sphincteric action) and on true vocal cords. Revise their innervations and clinical significance. 5. Revise surface markings of larynx and site for emergency tracheotomy. 6. Identify different parts of pharynx. Identify main structures in nasopharynx particularly opening of auditory tube and pharyngeal tonsil, and comment on their clinical significance. 7. Revise the gross, surface and radiological anatomy of the trachea. 8. Identify different components and joints of the thoracic cage: inlet, ribs, sternum and thoracic vertebrae. 9. Identify principal respiratory muscles: intercostals and diaphragm (attachments, nerve supply and actions). 10. Identify accessory muscles of respiration and revise the mechanics of ventilation and various diameters of thoracic cavity.
3	Pleura, Lungs & Mediastinum (Anatomy)	<ol style="list-style-type: none"> 1. Identify different parts of pleura and its recesses. Revise its innervations. 2. Identify different parts of a lung and contrast between right and left ones. 3. Identify structures entering and leaving the hilum of the lung and structures related to hila. 4. Identify important relations to each lung that leave impressions on them. 5. Revise blood supply, innervations and lymphatic drainage of lungs and pleurae. 6. Revise surface markings of lungs and pleurae. 7. Revise different parts and contents of the mediastinum. 8. Identify different parts of the branching bronchial tree from the trachea to alveoli. 9. Identify and carefully examine the radiological appearance of lungs, trachea, hilum, bronchial tree and skeletal structures (plain chest x-ray, bronchogram, CT scan and MRI).
4	Spirometry (Physiology)	<ol style="list-style-type: none"> 1. Define the different lung volumes and capacities and determine the amounts of these measurements in a spirogram. 2. Describe and perform the forced expiratory volume and maximum breathing capacity test and determine these measurements in a spirogram.

		3. Explain how pulmonary function tests are used in the diagnosis of restrictive and obstructive pulmonary disorders.
5	Throat swab (Microbiology)	<ol style="list-style-type: none"> 1. Be familiar with the selection, collection and transport of specimen for microbiological examination. 2. Be familiar with the cultivation and isolation of viable pathogens. 3. List types of media used for throat swab culture. 4. Identify and describe the type of hemolysis. 5. Explain the value of using of some biochemical reactions.
6	Sputum culture (Microbiology)	<ol style="list-style-type: none"> 1. Be familiar with the selection, collection, and transportation of sputum sample. 2. Be familiar with the cultivation of acid-fast and none acid-fast bacteria. 3. Be familiar with the procedure of Zeil-Neelsen stain. 4. Be able to visualize and observe mycobacterium under the microscope. 5. Be familiar with the LJ medium. 6. Prepare slides from the sputum for staining.
7	Web Path 1 (Pathology)	<ol style="list-style-type: none"> 1. Be familiar with the use of “Webpath” program in computerized pathology teaching and look up lung edema, congestion, thromboembolism, infarction, atelectasis and obstructive lung disease. 2. Examine glass slides of pulmonary edema, congestion, atelectasis and emphysema.
8	Web Path 2 (Pathology)	<ol style="list-style-type: none"> 1. Use Web path to look up restrictive lung disease, pneumonias granulomatous diseases and tumors. 2. Examine glass slides showing pneumonias, tuberculosis, Hydatid cyst in the lungs, and carcinoma.

Summary of teaching activities in the RS module:

Department	No. of Lectures	No. of Labs	No. of Discussions
Anatomy	8	3 (2 + 1 Hist.)	0
Physiology	9	1	0
Biochemistry	4	0	0
Pathology	10	2	0
Microbiology	8	2	0
Pharmacology	7	0	0
Community Medicine	2	0	0
Multidisciplinary (Introductory)	2	0	2
Multidisciplinary (pediatrics & medicine)	4	0	0
Total	54	8	2

Clinical cases for small group discussions

1. Lung Cancer

A 55-year-old man, heavy smoker (40 cig/day for 30 years) presented with cough, hemoptysis, right sided chest pain, and progressive shortness of breath for the last 3 months. Recently he noticed that he is passing large amounts of urine with increased frequency of urination day and night and he became constipated. In addition, he has pain and swelling around the wrist and ankle joints and over the last 3 months, he has poor appetite and lost 10 kg of body weight (from 60 kg to 50 kg). 20 years ago this gentleman was in Germany and worked for 5 years in ship building

Physical examination showed a thin, emaciated patient who looks in pain. His respiratory rate was 26/minute. He has clubbing in his fingers and toes with painful swelling around both wrists and ankles. Examination of the chest showed decreased movement of the right side in comparison with the left side, the trachea was shifted to the right side; there was a dull percussion note over the right upper zone anteriorly with absent breath sounds.

Investigations showed hemoglobin of 10 gm/ dl. Blood sugar, renal function, and liver function tests were normal. Serum calcium was 2.8 mmol/l.

Chest x-ray showed collapse consolidation in the right upper lobe, and x-ray of the wrists and ankles showed periosteal elevation with new bone formation.

Bronchoscopy showed a tumor obstructing the right upper lobe bronchus, biopsy was taken and histopathology revealed squamous cell carcinoma

Topics for discussion:

1. Explain the reasons behind each of the following physical sign and/or symptom:
Hemoptysis, chest pain, shortness of breath, passing large amounts of urine, constipation, swelling of joints, clubbing of fingers, tracheal shifting the right, dull percussion note over upper chest, x-ray findings of wrist and ankle joints (new bone formation)
2. Epidemiology of lung cancer
3. Risk factors and preventive measures of lung cancer
4. pathology and diagnosis of lung cancer
5. Effects of lung cancer
6. Describe the lymphatic drainage of the lungs
7. Staging of lung cancer
8. Modalities of treatment in lung cancer
9. Genetics of lung cancer

2. Chronic Obstructive Pulmonary Disease

History:

Mr. Sabri is a 60-year-old man currently employed at a factory as a machinist. He was seen in the pulmonary clinic for the first time with a complaint of dyspnea (Fighting for breath) on exertion and a cough productive of thick, yellow sputum. He states that he has had this cough for several years, but it usually "isn't a problem". His cough is usually productive of clear to white sputum. Recently, he had been coughing up yellow sputum, was more short of breath and now is even dyspneic at rest. Mr. Sabri has admitted to feeling warm at times lately, but he had not taken his own temperature with a thermometer. He also denied history of chest pain, hemoptysis, sinusitis, weight loss, allergies, night sweats or chills. Mr. Sabri admitted to smoking 30 cigarettes a day for the last 40 years. He stated that he had attempted to quit several times but was never successful for longer than 3 to 4 months. This machinist job had exposed him to many toxic fumes. His family history is positive for lung disease, his father died of emphysema at age 70, which was 15 years ago. His mother is alive and well at age 78. He also has 2 sisters, healthy at ages 48, 50 and a brother (55 year old) with diabetes.

Questions:

1. what medical problems suggested by the information obtained in the history
2. What is the most likely diagnosis and what are the key indicators for this diagnosis
3. What is Mr. Sabri smoking history in pack-years?
4. How would you exclude the possibility of asthma from the history
5. What is the significance of his sputum color?
6. What is the significance of his family and occupational history?

Physical Examination:

General: Alert and oriented, but in moderate respiratory distress, uses 3 word sentences because of dyspnea and coughing, which produces thick, yellow sputum.

Vitals: Temp.-38.1⁰C Heart Rate-120/min
BP-140/88mmHg Respiratory Rate 30/min

Head: Tongue and mucous membranes slightly cyanotic
Pupils Equal Reactive to Light Accommodation (PERLA)

Neck : Trachea midline and mobile; transmitted wheezes present, but no stridor. Carotids ++ bilaterally with no bruits;
JVD noted with head of bed elevated to 45 degrees.
Accessory muscles in neck tense with each inspiratory effort.

Chest: A-P diameter large, limited expansion of chest wall, generalized hyperresonance but decreased resonance over RLZ noted on chest percussion; bilateral expiratory polyphonic wheezes, louder

Heart: on right side, noted on auscultation; coarse crackles and bronchial breath sounds heard over RLZ. Regular rhythm with a rate of 120/min, no murmurs or rubs detected; S3 gallop and loud P2 noted on auscultation of the lungs; systolic heave noted at left sternal border; point of maximal impulse located at the fifth intercostals space at midclavicular line on the left

Abdomen: Soft and non-tender; hepatomegaly present; no evidence of paradoxical respiratory movement.

Extremities: No evidence of cyanosis or clubbing; pedal edema present and 2+ bilaterally in the lower extremities up to knee level; extremities dry and warm to touch

Questions:

1. How do you interpret the vitals?
2. What is indicated by the findings of cyanosis in the tongue and mucous membranes?
3. What are the possible causes of the bilateral wheezing and bronchial breath sounds heard over the RLZ?
4. What is suggested by a loud P2?
5. what pathophysiology could be causing the JVD, hepatomegaly and pedal edema
6. what is the most useful test to confirm the diagnosis of COPD?

Laboratory Evaluation:

Arterial blood Gases (ABGs): PH / PaCo2 / PaO2 / HCo3
7.33 / 50 / 45 / 30

O2 saturation 83%

Complete Blood Count:

	<u>Observed</u>	<u>Normal</u>
RBCs	5.7 million/mm ³	4.4-5.5 million/mm ³
Hb	17.5	14-16.5
HCT	56%	37-50%
WBC	16000/mm ³	5000-10000/mm ³
Segs	77%	38-79%
Bands	10%	0-7%
Lymphocytes	10%	12-51%
Esirophils	1%	0-8%
Monocytes	1%	0-10%

Chemistry: All within normal limits except for the Co2(32meg/liter)

Chest Radiography (See attached images)

Hype inflated chest manifested by flattened diaphragm and barrel shaped chest consistent with COPD.

There is consolidation involving the right lower lobe and seen posteriorly in the lateral chest radiograph consistent with right lower lobe pneumonia

Questions:

1. How would you interpret the ABGs?
2. How would you interpret the CBC? What could be causing the elevated WBCs? What is the likely cause of the elevated RBC?
3. How important is the chest x-ray in determining the cause of Mr. Sabri symptoms? What does it show to be the underlying condition of the patient respiratory system?
4. What other tests/procedures should be ordered at this point?
5. What therapy should the physician order for Mr. Sabri?

Management of COPD:

The patient was admitted to the pulmonary care unit. The physician ordered the following:

- O2 by nasal canula 2LPM, wean > 90%
- Nebulizer with salbutamol and Ipratropium (Antrovent®)
- Methylprednisolone (solu-medrol®) 125 mg IV every 6 hours and then 60 mg orally.
- Ceftriaxone 2 gm Q24 hours + clarithromgcin 500 mg PO Q12
- Sputum gram stain, culture and sensitivity

- Blood culture

Questions:

1. What is the goal of the oxygen therapy in this case? How should it be evaluated
2. What type of bronchodilators is Mr. Sabri receiving? What are the possible side effects?
3. How should the overall effectiveness of the bronchodilators be evaluated?
4. What is the rate of steroid therapy? How long this medication should be maintained.
5. What should the respiratory technician do to improve the chances of obtaining an appropriate sputum sample?
6. What is the significance of sputum and blood culture?
7. What advice would you give Mr. Sabri in regard to his long-term respiratory health.
8. What methods of smoking cessation you know?

Conclusion:

Over the next several hours, Mr. Sabri steadily improved. His ABG on 2LPM revealed a PaO₂ of 66mmHg. By the third day, his dyspnea improved to the point where he could walk around the unit without difficulty. On the fifth, he was discharged on a regimen of oral antibiotics and oxygen. The consultant pulmonologist requested a follow-up in the pulmonary clinic in one week.

3-Teachingandlearningmethods:

METHODS USED:

- Lectures
- Discussions
- Practical classes
- Multidisciplinary (Paediatrics & Medicine) lectures

4- StudentsAssessmentmethods:

4-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean’s office.

4-B) Assessment Tools:

Exam	Day	Date
Practical	According to the group	
Final- Theory	To be decided by Registry office.	

4-C) WeightingSystem:

Examination	Marksallocated
Finalexam:	
o- Written	250
p- Practical	50
Total	300

4-D) Examinationdescription:

Examination	Description
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Finalexam: o- Written p- Practical	<input type="checkbox"/> select(MCQs),Shortessay,cases,complete, crossmatching
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Recommended Text Books and Atlases:

Anatomy:

- Clinical Anatomy for Medical Students. By R.S. Snell, (latest edition).
- Grants Atlas of Anatomy or any other reasonable colored atlas of Human Anatomy.
- Before we are born. By K.L. Moore and T.V.N. Persaud, 5th edition 1998.
- Basic Histology, by L.Carlos Junqueira, 10th Edition 2004/or functional histology by Wheater (latest edition)
- Supplementary Departmental Handouts.

Biochemistry:

- Harper's Biochemistry. By Robert K. Murray and Co., 1999.
- Supplementary Departmental Handouts.

Physiology:

- Textbook of Medical Physiology, by Guyton and Hall, 10th edition.

Microbiology:

- Medical Microbiology. An Introduction to Infectious Diseases. By Sheries, 5th edition 2010.

Pathology:

- Basic Pathology, by Kumar, Cotran and Robbins, 8th. edition, 2007.
- Supplementary Departmental Handouts.

Pharmacology:

- Lipincott's Illustrated Reviews: Pharmacology by Richard A. Harvey and Pamela C Chample, 4nd edition, 2009.

Community Medicine:

- Occupational Health Practice Harrington, Grill, Aw.
- Supplementary Departmental handouts.



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine**

**Course Name: ENDOCRINE SYSTEM
Code: MED 311**

A)Basic Information:

1. **Course title:**Endocrine System (E.S.)
2. **Specialty:**M.B.B.S. program
3. **Department offeringthecourse:**Multidisciplinary
4. **Academic year:**third year first semester
5. **Dateof specification approval:**
6. **InternalEvaluator:**
7. **Allocated marks:** 300marks.
8. **Course duration:** 4weeksof teaching.
9. **Credithours:** 6
10. **Teaching Approaches:**Integrated System Block with PBL

B)ProfessionalInformation:

1- OverallAimof the Course:

Upon succesful completion of this course students should be able to:

1. Structures of various endocrine glands, their development, their histology and their blood supply.
2. The nature, functions, physiologic roles and mechanisms of action of hormones.
3. Hormone regulation and effects of deranged endocrine functions.
4. Pathogenesis, morphological changes and complications of diseases affecting the endocrine system. The use of hormones and drugs in diagnosis and treatment of endocrine disorders

2. Coursecontents:

A-Theory

No	Title	Objectives
1-2	Introductory case presentation for E.S. (multidisciplinary)	<ol style="list-style-type: none"> 1. Understand the general outline of the E. S. Module. 2. Be familiar with the modalities of teaching throughout the course. 3. Acknowledge the important relation between normal and abnormal structure and function. 4. Appreciate the importance of basic medical sciences in clinical application.
3	Morphology of the endocrine glands (Anatomy)	<ol style="list-style-type: none"> 1. Review differences between endocrine and exocrine glands. 2. List the endocrine glands. 3. Describe the structure of endocrine glands. 4. Describe the location, relation, blood and nerve supply and lymphatic drainage of endocrine glands.

4	Introduction to endocrinology I (Biochemistry)	<ol style="list-style-type: none"> 1. Understand the nature of hormones. 2. Describe hormone biosynthesis, secretion and transport. 3. Understand targeting delivery and response of hormones. 4. Understand hormonal interactions (systemic, cellular, synergistic and inhibitory).
5	Introduction to endocrinology (Physiology)	<ol style="list-style-type: none"> 1. Outline the role of hormones as an integral part of the control mechanism used to regulate different metabolic, developmental growth and reproductive functions in the human body. 2. Characterize the major hormonal biorhythms. 3. Describe general aspects, which govern regulation of hormone secretion. 4. Describe how feedback relationship is important in determining the level of circulating hormones.
6	Histology and embryology of endocrine glands I (Anatomy)	<ol style="list-style-type: none"> 1. Describe the development of the endocrine glands (thyroid, parathyroid, pituitary, adrenal and pancreas). 2. Describe the microscopic structure and cells of the pituitary gland. 3. Describe the microscopic structure of thyroid follicle, follicular and parafollicular cells.
7	Histology and embryology of endocrine glands II (Anatomy)	<ol style="list-style-type: none"> 1. Describe the microscopic structure and cells of the parathyroid gland. 2. Describe the zones and cells of the adrenal gland. 3. Describe the microscopic structure of the pancreas.
8	Signal transduction, 2 nd messengers and Receptors (Biochemistry)	<ol style="list-style-type: none"> 1. Describe the structure of cell membrane receptors and intracellular receptors for different hormones 2. Identify different types of second messengers 3. List the intracellular actions of all 2nd messengers 4. Understand the mechanism of 2nd messenger actions including PIP2 turnover (Ca²⁺/protein kinase C systems) diacylglycerol (DAG) and NO
9	Mechanism of hormone actions (Biochemistry)	<ol style="list-style-type: none"> 1. Describe the mechanism of action of peptide hormones 2. Describe the mechanism of action of amino acid derivatives hormone 3. Describe the mechanism of action of cholesterol derivatives hormone 4. Describe the mechanism of action of fatty acid hormone derivatives
10	Hypothalamic-pituitary relationship (Physiology)	<ol style="list-style-type: none"> 1. List adenohypophyseal & neurohypophyseal hormones 2. Describe the regulation of anterior pituitary hormones by the hypothalamus. 3. Describe the posterior pituitary gland relationship with the hypothalamus
11	Pharmacology of hypothalamic hormones (Pharmacology)	<ol style="list-style-type: none"> 1. List synthetic analogs of hypothalamic hormones. 2. Describe mechanism of action of these synthetic analogs. 3. Characterize their clinical uses and routes of administration. 4. List their side effects.
12	Adenohypophyseal hormones I (Physiology)	<ol style="list-style-type: none"> 1. Describe growth and metabolic effects of growth hormone. 2. List the principal insulin-like growth factors and describe their relationship to the actions of growth hormone
13	Adenohypophyseal hormones II (Physiology)	<ol style="list-style-type: none"> 1. Describe the regulation of growth hormone secretion. 2. List the factors which stimulates growth hormone secretion 3. List the factors which inhibits growth hormone secretion 4. Describe the role of the hypothalamus, growth hormone releasing hormone and somatostatin in the control of growth hormone secretion.
14	Posterior pituitary hormones (Physiology)	<ol style="list-style-type: none"> 1. Discuss the physiological effects of antidiuretic hormone. 2. Describe the regulation of antidiuretic hormone secretion. 3. List the major physiological effects of oxytocin. 4. Describe the regulation of oxytocin secretion.
15	Pathology of the anterior & posterior pituitary gland (Pathology)	<ol style="list-style-type: none"> 1. Describe the neoplasms of anterior pituitary and their clinical syndromes. 2. Know the causes & clinical entities related to hypopituitarism. 3. Discuss diabetes insipidus and the syndrome of inappropriate antidiuretic hormone secretion. 4. Define craniopharyngioma.

16	Pharmacology of anterior pituitary hormones (Pharmacology)	<ol style="list-style-type: none">1. Describe pharmacology of anterior pituitary hormones.2. Review their pharmacological actions.3. List synthetic analogs and describe their routes of administration.4. Describe their clinical uses and adverse reactions.
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17	Biochemical aspects of thyroid hormones metabolism (Biochemistry)	<ol style="list-style-type: none"> 1. Describe thyroid hormone biosynthesis: monoiodotyrosines, diiodotyrosines, T3, T4 and reverse T3. 2. Describe metabolism of iodide and iodine. 3. Discuss the role of peroxidase, iodinase, coupling, protease, dehalogenase and thyroglobulin. 4. Discuss thyroid stimulating hormone action via cAMP. 5. Describe the regulation of thyroid stimulating hormone by thyroid releasing hormone and T4, T3, somatostatin and dopamine. 6. Discuss T4 and T3 transport.
18	Thyroid hormones (Physiology)	<ol style="list-style-type: none"> 1. Describe physiological aspects related to the formation and secretion of thyroid hormones. 2. Characterize physiological consequences of thyroid hormones binding to transporting proteins. 3. List the main physiological actions of thyroid hormones. 4. Describe the regulation of thyroid hormones secretion.
19	Pathology of the Thyroid Gland I (Pathology)	<ol style="list-style-type: none"> 1. Define and describe the pathogenesis and clinical findings of thyrotoxicosis, diffuse hyperplasia of thyroid and Graves's disease. 2. Define and describe the pathogenesis of multinodular goitre. 3. List types of solitary thyroid nodules and define the meaning of "cold" and "hot" nodule. 4. Describe the clinical findings & pathology of hypothyroidism and define the terms Cretinism & Myxedema. 5. Define and describe the pathogenesis of Hashimoto's thyroiditis, lymphocytic thyroiditis, subacute thyroiditis and Reidle's thyroiditis.
20	Thyroid and antithyroid drugs (Pharmacology)	<ol style="list-style-type: none"> 1. Characterize the pharmacology of thyroid hormones. 2. Describe the pharmacology of antithyroid drugs. 3. Describe their clinical uses, routes of administration and adverse reactions
21	Hormonal control of calcium PO4 metabolism I (Biochemistry)	<ol style="list-style-type: none"> 1. Discuss absorption, metabolism and excretion of calcium and phosphate. 2. Discuss the role of vitamin D in calcium and phosphate absorption 3. Outline the effect of calcium ion concentration on the regulation of the active form of vitamin D levels 4. List the major physiological effects of PTH 5. Discuss the regulation of PTH secretion
22	Hormonal control of calcium metabolism II (Biochemistry)	<ol style="list-style-type: none"> 1. Structure of calcitonin 2. List the major physiological actions of calcitonin 3. Discuss the regulation of calcitonin secretion 4. Compare between PTH and calcitonin as regulators of calcium levels.
23	Pathology of the thyroid gland II and parathyroid gland (Pathology)	<ol style="list-style-type: none"> 1. Describe adenomas and carcinomas and their differential diagnosis. 2. Discuss various types of malignancies in the thyroid. 3. Discuss primary & secondary hyperparathyroidism. 4. Differentiate between parathyroid hyperplasia & parathyroid adenoma. 5. Describe hypoparathyroidism & its clinical manifestations & Etiology.
24	Pharmacology of parathyroid hormone, vitamin D, calcitonin (Pharmacology)	<ol style="list-style-type: none"> 1. Characterize the pharmacology of the parathyroid hormone, vitamin D and calcitonin. 2. List synthetic analogs and describe their routes of administration, clinical uses and their adverse reactions.
25	Endocrine functions of the pancreas (Physiology)	<ol style="list-style-type: none"> 1. Discuss principal hormones that affect blood glucose concentration. 2. Discuss metabolic effects of insulin. 3. Discuss the regulation of insulin secretion. 4. Discuss physiological effects of glucagon. 5. Describe the regulation of glucagon secretion.
26	Integrated metabolism and hormonal	<ol style="list-style-type: none"> 1. Describe the metabolic picture in the well-fed state and during starvation

	regulation (Biochemistry)	in various tissues (liver, brain, muscle and adipose tissues). 2. Describe the regulation of glycogen metabolism, glycolysis, hexose monophosphate, gluconeogenesis ,lipid and amino acid metabolism by insulin/counter-regulatory hormones ratio.
27	Pathology of the endocrine pancreas, including diabetes (Pathology)	1. Discuss diabetes mellitus type I and type II. 2. Discuss complications of diabetes. 3. Discuss islet cell tumors.
28	Epidemiology of diabetes mellitus (Community Medicine)	1. Describe factors influencing the frequency and severity of DM in various populations. 2. Describe the pattern of DM distribution among Jordanians.
29	Insulin and oral hypoglycemic agents (Pharmacology)	1. Discuss the pharmacology of insulin. 2. Discuss the pharmacology of oral hypoglycemic drugs. 3. Describe their clinical uses, administration and adverse reactions.
30	Steroidogenesis (Biochemistry)	1. Describe the biosynthesis of steroid hormones. 2. Describe the role of cytochromes P-450 in steroidogenesis. 3. Describe defects and consequences of congenital adrenal hyperplasia.
31	Mineralocorticoids (Physiology)	1. Describe physiological effects of mineralocorticoids (aldosterone). 2. Discuss the regulation of aldosterone secretion. 3. Describe the clinical consequences of hypo and hyperaldosteronism.
32	Adrenal medullary hormones (Physiology)	1. List the catecholamines secreted by the adrenal medulla. 2. Describe the actions of catecholamines in human body. 3. List the factors that regulate adrenal medullary secretion.
33	Pathology of the adrenal glands (Pathology)	1. Describe the pathological features of benign and malignant tumors of the adrenal gland. 2. List causes of Addison's diseases and their pathological features. 3. Classify the types of multiple endocrine neoplasia.
34	Glucocorticoids (Physiology)	1. Describe the major physiological effects of glucocorticoids. 2. Discuss the regulation of cortisol secretion. 3. Describe the clinical consequences of hypo and hyperadrenalism.
35	Pharmacology of mineralocorticoids (Pharmacology)	1. Characterize the pharmacology of mineralocorticoids in terms of pharmacokinetics, mechanisms of actions and adverse reactions. 2. Describe the synthetic analogs and their routes of administrations. 3. Understand the rationale of replacement therapy.
36	Pharmacology of glucocorticoids (Pharmacology)	1. Characterize the pharmacology of glucocorticoids in terms of pharmacokinetics, mechanism of action and adverse reactions. 2. Describe the synthetic analogs and their routes of administration. 3. Understand the rationale of replacement therapy.
37	Biochemical Principles of Laboratory Techniques used for the measurement of hormones (Biochemistry)	1. List the most important lab methods used for laboratory measurement of hormones Radio Immuno Assay (RIA) Enzyme-Linked Immunosorbent Assay (ELISA), Fluorescence Polarization Immuno Assay (FPIA), Chemiluminescence enzyme immunoassay (CLIA) 2. Understand the principles underlying the techniques used in hormone measurement.
38	Interpretation of laboratory tests used in Endocrinology (Medicine)	1. Understand how hormonal lab tests are used to put a clinical diagnosis. 2. Provide examples on the role of hormonal lab tests in formulating endocrine Diagnosis. 3. Describe the importance of dynamic hormonal testing in the evaluation of hormone functions.

B. Practical Laboratory Sessions:

No	Title	Objectives
1	Morphological and microscopic anatomy of endocrine glands (Anatomy)	<ol style="list-style-type: none">1. Identify different parts of the thyroid gland and study its relations.2. Identify the adrenal gland and study its relations.3. Identify the pituitary gland and study its relations.4. Identify the ultra-structural components of the following glands and correlate between them:<ol style="list-style-type: none">a. Pituitary glandb. Thyroid glandc. Parathyroid glandsd. Pancrease. Adrenal glands
2	Pathology of Endocrine glands I (Pathology)	<ol style="list-style-type: none">A. Pathology of the thyroid gland.<ol style="list-style-type: none">1. Describe the morphology of various types of thyroiditis.2. Describe the features of nodular colloid goitre.3. Describe the features of adenomas.4. Describe the features of various carcinomas.B. Pathology of the pituitary gland.<ol style="list-style-type: none">1. Identify various types of adenomas and the significance of using immunological stains in their categorization.2. Describe the morphology of craniopharyngioma.
3	Pathology of Endocrine glands II (Pathology)	<ol style="list-style-type: none">A. Parathyroid gland.<ol style="list-style-type: none">1. Identify the morphological features of hyperplastic gland and compare with adenoma.B. Endocrine pancreas.<ol style="list-style-type: none">1. Identify the morphological features of the pancreas in diabetes.2. Identify the morphological features of islet cell adenoma.C. Adrenal gland<ol style="list-style-type: none">1. Identify the morphological features of atrophic and hyperplastic glands. Compare with the features of cortical adenoma.2. Identify the morphological features of pheochromocytoma.3. Identify the morphological features of neuroblastoma.

C. Small group seminars

Case I: Thyrotoxicosis

Case II: Diabetes mellitus

Clinical case 1:

Thyrotoxicosis

Case history

Mrs. A.B. was 25 years old when she became pregnant for the first time. The pregnancy was uneventful and no thyroid function disturbance was recognized at her routine postpartum visit, i.e., six weeks, after delivery. At about ten weeks postpartum, she became increasingly fatigued-and irritable with episodes of palpitations. She was seen by an internist because of these symptoms.

Physical Examination:

She appeared anxious and hyperkinetic. Her pulse was 120/min, BP 130/60. Her skin was warm, moist and smooth. She had lid lag and normal ocular motility. The thyroid was diffusely enlarged, with a prominent isthmus, and was estimated to weigh approximately 40 grams (2 times normal size). She had a bounding cardiac apical impulse, a pulmonic flow murmur, and a systolic bruit over the thyroid. She had a fine tremor and rose from a deep knee bend with difficulty. The rest of the examination was unremarkable.

Laboratory data:

Serum T4 is 16 µg/100 ml (normal 4.5-10), serum T3 is 550 ng/100 ml (normal 75-180).

Objectives of the seminar:

1. What is your differential diagnosis?
2. Are more tests required to define the thyroid status.
3. What additional physical signs would strengthen your preferred diagnosis?
4. Describe the expected clinical course for 2 of the possible diagnoses, and what therapy would you recommend.
5. What is the cause of the a) pulmonic flow murmur? b) the thyroid bruit? c) lid lag?
6. Is there any contraindication to future pregnancy?

Clinical case 2:

Diabetes Mellitus

Case history

The patient is a 23-year-old woman who was referred in December for evaluation of suspected glucose intolerance. The patient initially presented the previous April with onset of headache. Her blood glucose (BG) was 112 mg %. In September a 2-hour OGTT was done:

FBG = 125 mg %
1/2-hour BG = 188 mg %
1 -hour BG = 243 mg %
1 1/2-hour BG=251 mg %
2-hour BG = 223 mg %

Patient has experienced occasional thirst and hunger, with mild fluctuations in weight. In September, she was treated with a meal plan eliminating concentrated sweets.

The patient has no specific symptoms of hypoglycemia.

There is no history of DKA, diabetic retinopathy, nephropathy, neuropathy or hypertension.

Family history:

Father, deceased age 58 due to myocardial infarct; history of diabetes mellitus 2 years prior to death. Mother, age 55, is alive and well. One brother and one step-brother is alive and well. There is a history in paternal grandmother and great-grandmother of diabetes mellitus.

Physical examination:

Height 5' 1 1/2", weight 106 1/2 lb. IBW - 105 lb. BP 130/70 right arm supine, 120/76 right arm sitting. Pulse 80/min and regular. Respirations 16/min. Patient is afebrile. **HEENT:** PERRLA EOM intact. Fundi normal. ENT clear.

Cardiovascular: Regular rate, with no murmurs or gallops. Peripheral pulses are 2+ and equal bilaterally, without bruits.

Neurological: Cranial nerves II-X11 are normal. Motor and sensory exam is intact. DTR 2 + and equal bilaterally

Objectives of the seminar:

1. Do the glucose tolerance tests results meet the criteria to establish the diagnosis of diabetes mellitus?
2. If this is diabetes mellitus, please indicate what type of diabetes that it is and the reasons that you would believe that it fits that classification?
3. What further diagnostic tests would help you in establishing the type of diabetes that is present?
4. What therapeutic intervention would you recommend at the current time?
5. Explain how normal or even elevated plasma insulin levels can be accompanied by hyperglycemia and discuss common mechanisms for this phenomenon.
6. In the absence of insulin treatment can Type 2 diabetic patients eventually develop spontaneous DKA? Explain

Endocrine System Lectures & Practical

Week 1 / Science Hall

Date & Time	MON.	TUE.	WED.	THU.
8:15 – 11:00				
11:15 - 12:05 (Lecture)		Morphology of the endocrine glands (Anat)	Histology and embryology of endocrine glands 1 (Anat)	Mechanism of hormone actions I (Bioch)
12:15 – 1:05 (Lecture)	Introductory case presentation for the endocrine system (medicine)	Introduction to endocrinology (Bioch)	Histology and embryology of endocrine glands 2 (Anat)	Hypothalamic-pituitary relationship (Phys)

01:15 - 2:05 (Lecture)	Introductory case presentation for the endocrine system (medicine)	Introduction to endocrinology (Phys)	Adenohypophyseal hormones I (Phys)	Adenohypophyseal hormones II (Phys)
2:15 - 5:00				

Endocrine System Lectures & Practical

Week 2 / Science Hall

Date & Time	SUN.	MON.	TUE.	WED.	THU.
8:15 – 11:00 (Practical)	Anat.(A) Patho. (B)1	Anat.(B)	Anat.(C) Patho.(D)1	Anat.(D)	
11:15 – 12:05 (Lecture)	Pathology of the anterior & posterior pituitary gland (Path)	Thyroid hormones (Phys)	Hormonal control of calcium metabolism I (Phys) Hormonal control of calcium metabolism I (Phys)	Hormonal control of calcium metabolism II (Phys)	Regulation of glucose metabolism (Bioch)
12:15 – 1:05 (Lecture)	Pathology of the Thyroid Gland I (Path)	Pharmacology of anterior pituitary hormones (Pharm)	Pathology of the Thyroid and parathyroid glands (Path)	Pharmacology of parathyroid hormone, vitamin D , calcitonin (Pharm)	Epidemiology of diabetes mellitus (C.M)
01:15 - 2:05 (Lecture)	Posterior pituitary hormones (Phys)	Biochemical aspects of thyroid hormones metabolism (Bioch)	Thyroid and antithyroid drugs (Phrm)	Endocrine functions of the pancreas (Phys)	Insulin and oral hypoglycemic agents I (Pharma)
2:15 - 5:00 (Practical)		Patho.(A)1		Patho.(C)1	

Endocrine System Lectures & Practical

Week 3 / Science Hall

Date & Time	SUN.	MON.	TUE.	WED.	THU.
8:15 – 11:00 (Practical)	Patho.(A)2		Patho.(C)2		
11:15 – 12:05 (Lecture)	Mineralocorticoids (Phys)	Pathology of the endocrine pancreas including DM I (Path)	Adrenal medullary hormones (Phys.)	Biochemical Principles of Laboratory Techniques used for the measurement of hormones (Bioch) (Lecture)	Revisision (Pharma)
12:15 – 1:05 (Lecture)	Insulin and oral hypoglycemic agents II (Pharm)	Pathology of the endocrine pancreas, including diabetes II (Path)	Glucocorticoids (Phys.)	Pathology of the adrenal glands (Path)	Revisision (Physio)

01:15 - 2:05 (Lecture)	Steroidogenesis (Bioch)	Pharmacology of glucocorticoids (Pharm)	Pharmacology of the mineralocorticoids (Pharma)	Interpretation of laboratory tests used in Endocrinology (Medicine) (Lecture)	
2:15 - 5:00 (Practical)		Patho.(B)2		Patho.(D)2	

Endocrine System Lectures & Practical
Week 4 / Departmental discussion rooms

Date & Time	SUN.	MON.	TUE.	WED.
	SGD*	SGD	SGD	SGD

SGD = Small Group Discussion

*

2-Summary of teaching activities in the E.S. module:

Department	No of Lectures	No of Labs	No of Small Group Seminars
Anatomy	3	1	0
Physiology	12	0	0
Biochemistry	8	0	0
Pathology	5	2	0
Pharmacology	7	0	0
Community Medicine	1	0	0
Multidisciplinary	2	0	32-40*
Total	38	3	32-40*

* The number of small group seminars depends on the total number Of students in the batch

3-Teachingandlearningmethods:

METHODS USED:

- Lectures
- Discussions
- Practical classes
- Multidisciplinary (Paediatrics & Medicine) lectures

4- StudentsAssessmentmethods:

4-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

4-B) Assessment Tools:

Exam	Day	Date
Practical	According to the group	
Final- Theory	To be decided by Registry office.	

4-C) WeightingSystem:

Examination	Marksallocated

Finalexam:	
q- Written	300
r- Practical	100
Total	400

4-D) Examination description:

Examination	Description
Finalexam: q- Written r- Practical	□ select(MCQs),Shortessay,cases,complete, crossmatching

4.E. Assessment:

	Exam format	Weight (%)
First exam	MCQ	40%
Laboratory exam		20%
Final exam	MCQ	40%

5. RECOMMENDED TEXT BOOKS and ATLASES:

- * **Anatomy:**
 - Principles of Human Anatomy. By G.J. Tortora, Latest edition.
 - Clinical Anatomy for Medical Students. By R.S. Snell, Latest edition.
 - Basic Histology, by L. Carlos Junqueira. Latest edition.
 - Before we are born. By K.L. Moore and T.V.N. Persaud, Latest edition.
- * **Biochemistry:**
 - Harper's Biochemistry. By Robert K. Murray and Co., Latest edition.
 - Supplementary Departmental Handouts.
- * **Physiology:**
 - Textbook of Medical Physiology, by Guyton and Hall, Latest edition
 - Review of Medical Physiology, by William F. Ganong, Latest edition,
- * **Pathology:**
 - Essential Pathology, by Emanuel Rubin, Latest edition,
 - Basic Pathology, by Kumar, Cotran and Robbins, Latest edition.
- * **Pharmacology:**
 - Lipincott's Illustrated Reviews: Pharmacology, Latest edition.
- * **Community Medicine:**
 - Supplementary Departmental handouts.



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine**

**Course Name: Gastro-Intestinal Tract (GIT) System
Code: MED 312**

A. Basic Information:

1. **Course title:**Gastro-Intestinal Tract (GIT) System.
2. **Specialty:**M.B.B.S. program
3. **Department offering the course:**Multidisciplinary
4. **Academic year:**third year second semester
5. **Date of specification approval:**
6. **Internal Evaluator:**
7. **Allocated marks:** 300 marks.
8. **Course duration:** 6 weeks of teaching.
9. **Credit hours:** 6
10. **Teaching Approaches:** Integrated System Block with PBL

B) Professional Information:

1- Overall Aim of the Course:

Upon successful completion of this course, students should be able to:

1. Describe the gross structure and functional anatomy of each GIT organ.
2. Recognize the microscopic appearance of different parts of the GIT and the normal embryology development with their congenital abnormalities.
3. Describe the function of each GIT structure.
4. Explain how neuronal mechanisms and GIT hormones regulate gastrointestinal, pancreatic, and biliary functions.
5. Describe the major types of nutrients.
6. Explain how proteins, carbohydrates, and fats are digested and absorbed.
7. Identify and describe the major disease processes including neoplasm's and malabsorption conditions affecting different organs of GIT in terms of pathogenesis, gross and microscopic changes, manifestations, and complications.
8. Identify various bacterial, viral, fungal, and parasitic infections affecting GIT, and describe the principle manifestations, diagnosis, treatment, and prevention of each individual microorganism and parasitic agent affecting GIT.
9. Describe the mechanisms of action, pharmacokinetics, indications, and adverse effects of commonly used drugs in the treatment of GIT disorders (vomiting, peptic ulcer disease, constipation, and diarrhea).
10. Describe the essential nutritional requirement, body weight and energy balance, nutritional deficiencies, and disease processes associated with diet.
11. Understand the clinical differences in the toxic effect of drugs on the liver and the management of some important cases of drug induced liver injury.

2. Coursecontents:

A- Thiory

#	Lecture Title	Lecture Objectives
1 & 2	Introductory Case Presentation for GIT System (All)	<ol style="list-style-type: none"> 1. Understand the general outline of the GIT module. 2. Be familiar with the modalities of teaching throughout the course. 3. Acknowledge the important relation between normal and abnormal structure and function 4. Appreciate the importance of basic sciences in clinical application.
3 & 4	Anatomy and histology of oral cavity, salivary glands, pharynx, and esophagus (Anatomy)	<ol style="list-style-type: none"> 1. Describe parts of the mouth. 2. Describe the gross anatomy and histology of the tongue, palate, teeth and gum 3. Identify tongue papillae and describe their structures. 4. Describe briefly the anatomy and histology of various salivary glands. 5. Describe the anatomy and histology of various parts of the pharynx. 6. Identify the muscular wall structure of the esophagus and its anatomical relations and sphincters. 7. Describe the nerve and blood supply of the pharynx and esophagus.
5	Salivary secretion + Esophageal motility and vomiting (Physiology)	<ol style="list-style-type: none"> 1. Describe the physiological role of various salivary glands. 2. Describe the mechanisms involved in the regulation of salivary secretion. 3. Describe the components and function of saliva. 4. Describe the mechanism of swallowing phases (oral, Pharyngeal, and esophageal). 5. Discuss the neural control of swallowing and the mechanism of vomiting. 6. Heart burn, swallowing and vomiting.
6	Diseases of the oral cavity (Pathology)	<ol style="list-style-type: none"> 1. Give a simplified classification of diseases of oral cavity. 2. Describe the etiology, pathogenesis, and pathology of the main diseases of oral cavity. 3. Classify the diseases of the salivary glands. 4. Provide a list of the of salivary gland tumors and briefly describe their pathology.
7	Gastric and intestinal secretion (Physiology)	<ol style="list-style-type: none"> 1. Describe the various types of gastric cells and the secretion of each cell type. 2. Mention the components of gastric juice and the function of each component with special attention on the role of hormones and other factors influencing gastric secretion. 3. Describe the different mechanisms involved in the control of gastric secretion (mechanical, chemical, and neural). 4. Mention component of intestinal secretion and its control.

8	The abdominal walls and inguinal region (Anatomy)	<ol style="list-style-type: none"> 1. Describe the landmarks and different regions of the anterior abdominal wall. 2. Describe the layers of the anterior abdominal wall including abdominal muscles and rectus sheath. 3. Describe the anatomy of inguinal region. 4. Describe the spermatic cord coverings and contents. 5. 5. Make a comparison between the inguinal, umbilical, and femoral herniae.
9&10	Diseases of the esophagus (Pathology)	<ol style="list-style-type: none"> 1. Describe the main acquired anatomic disorders of the esophagus with emphasis on hiatal hernia, achalasia and diverticulosis in terms of etiology, pathogenesis and pathologic features. 2. Describe the main pathologic features of the esophagus with emphasis on reflux esophagi is. 3. Mention the cause, pathologic features, and clinical significance of esophageal varies. 4. Indicate the importance of Barrett's esophagus as an example of a pre-malignant lesion of the esophagus. 5. Describe the main tumors of the esophagus.
11	The abdominal cavity and peritoneum. (Anatomy)	<ol style="list-style-type: none"> 1. Indicate the relations and arrangements of the abdominal organs. 2. Describe the anatomical features of the diaphragm. 3. Describe folding and ligaments of the peritoneum. 4. Indicate the Intra- and retroperitoneal relations. 5. Describe the lesser and greater omen (sacs) and other related peritoneal fosse and recesses. 6. Describe the anatomy of the mesenteries.
12	Anatomy of GIT hollow organs (stomach, duodenum, small and large intestines). (Anatomy)	<ol style="list-style-type: none"> 1. Indicate the anatomical relationships of the abdominal esophagus. 2. Describe the anatomy of stomach (location, parts, and anatomical relations). 3. Describe the anatomy of the duodenum (location, parts, and anatomical relations). 4. Compare the anatomical features of the jejunum and ileum. 5. List parts and describe general features and relations of large intestine. 6. Describe the anatomy of the rectum and anal canal with emphasis on sphincters.
13	Histology of the GIT "Hollow organs" (Anatomy)	<ol style="list-style-type: none"> 1. Describe the histological structure of the wall and glands of the esophagus. 2. Identify the histological structure of the stomach. 3. Compare the histological features of the small and large intestines. 4. Identify the histological features and characteristics of different transitional areas and sphincters (gastro-esophageal, gastro-duodenal, ilio-cecal and recto-anal).
14	Diseases of the stomach (gastritis) (Pathology)	<ol style="list-style-type: none"> 1. Provide a simplified classification of diseases of the stomach. 2. Describe gastritis and Helicobacter pylori-induced gastritis in terms of pathogenesis, 3. Pathologic features and complications.
15	Disease of the stomach (Peptic Ulcer) (Pathology)	<ol style="list-style-type: none"> 1. Describe peptic ulcer disease in term of etiology, pathogenesis, types, pathology and complications. 2. Describe other types of gastric ulcerations.
16	Pathology of gastric tumors (Pathology)	<ol style="list-style-type: none"> 1. Provide a simplified classification of gastric tumors. 2. Enumerate the main types of gastric carcinoma and describe their main features. 3. Identify the main types of gastric lymphoma.

17	Enzymes of the GIT system (Biochemistry)	<ol style="list-style-type: none"> 1. List the GIT enzymes 2. Describe how the GIT enzymes get activated 3. Understand the role of GIT enzymes in the process of digestion 4. Discuss the clinical significance of these enzymes including lactase deficiency
18 & 19	Anatomy and histology of accessory organs of GIT (solid organs). (Anatomy)	<ol style="list-style-type: none"> 1. Describe the anatomy and histology of the liver (location, parts, relations and vascular supply). 2. Describe the peritoneal coverings and ligaments of various organs in the abdomen. 3. Describe the anatomy and histology of the biliary system. 4. Describe the anatomy of the pancreas (location, parts, relations and vascular supply).
20	Bacterial infection of GIT ,Gastritis and Helicobacter pylori (Microbiology)	<ol style="list-style-type: none"> 1. Understand the role of Helicobacter in gastritis as well as laboratory diagnosis and sensitivity to antibiotics. 2. Recognize morphology ,culture, and the pathogenesis of causative bacteria (Salmonella, Shigella and Campylobacter) 3. Appreciate epidemiology and treatment.
21	Diseases of the intestines I (malabsorption) (Pathology)	<ol style="list-style-type: none"> 1. Describe malabsorption in terms of causes, clinical significance, and complications. 2. Understand the pathology of celiac disease and its clinical significance
22	Metabolic processes in the liver including ethanol metabolism and its side effects (Biochemistry)	<ol style="list-style-type: none"> 1. Describe specificity of carbohydrate, lipid, amino acid and nitrogen metabolism in the liver 2. Describe the role of liver in ethanol metabolism <ul style="list-style-type: none"> - Alcohol dehydrogenase enzyme - Aldehyde dehydrogenase enzyme - Microsomal ethanoloxidizing system (MEOS) 3. Understand the effects of alcohol and its metabolic products on body organs
23	Pancreatic secretion (Physiology)	<ol style="list-style-type: none"> 1. Describe the mechanism of pancreatic secretion from acinar cell. 2. Indicate the composition and the role pancreatic juice in food digestion. 3. Describe the activation of the pancreatic enzymes in the lumen of the small intestine. 4. Illustrate the regulation of pancreatic secretion (hormonal and neural).
24	Embryology of the gut I . (Anatomy)	<ol style="list-style-type: none"> 1. Describe the development of the foregut, midgut, and hindgut. 2. Describe the development of liver, pancreas, and spleen
25	Liver and Biliary secretion (Physiology)	<ol style="list-style-type: none"> 1. Describe the components of bile. 2. Indicate the function of each component secreted in bile in digestion. 3. Illustrate the regulation mechanisms involved in the secretion of bile.
26	Blood supply of GIT and portal circulation (Anatomy)	<ol style="list-style-type: none"> 1. Describe the blood supply of the stomach, liver, pancreas, spleen, duodenum, small and large intestines including rectum and anal canal. 2. Describe the formation, major tributaries, branches, relations, and termination of the portal system.

27 & 31	Drugs used in peptic ulcer disease I and II (Pharmacology)	<ol style="list-style-type: none"> 1. List major drugs or groups of drugs associated with GI ulceration and ways of preventing or reducing this risk. 2. Describe the mechanism of action of drugs or groups of drugs commonly employed in the management of peptic ulcer disease. 3. Explain the rationale behind the use of drug combination in Peptic ulcer disease. 4. List important antimicrobial drugs employed in peptic ulcer disease, and explain the therapeutic basis of their inclusion in the management of peptic ulcer disease. 5. Enumerate the adverse effects of drugs commonly used in peptic ulcer disease.
28	Diseases of the intestine II (inflammatory bowel diseases) (Pathology)	<ol style="list-style-type: none"> 1. Describe the chronic inflammatory bowel disease in terms of its main types, etiology, clinical, endoscopic, and pathologic features.
29	Gastric and intestinal motility (Physiology)	<ol style="list-style-type: none"> 1. Explain the receptive relaxation reflex and the basic electrical rhythm of the stomach motility and emptying, and factors affecting these processes (mechanical, chemical, hormonal, and neural). 2. Identify the different types of propulsive and mixing motility in small and large intestine and the regulation of these movements.
30	Disease of the intestine III (Ischemic bowel disease and bowel obstruction) (Pathology)	<ol style="list-style-type: none"> 1. Describe the types of ischemic bowel disease in term of etiology and pathologic features 2. Identify the main causes of bowel obstruction. 3. Discuss briefly the diverticular diseases of the bowel.
32	Liver function tests (Biochemistry)	<ol style="list-style-type: none"> 1. List the most common used liver function tests 2. Describe the clinical significance of each of these tests
33	Food poisoning Cholera (Microbiology)	<ol style="list-style-type: none"> 1. Understand the role of E. Coli, Clostridium perfringens, C. botulinum, Staphylococcus aureus and B. cerius in food poisoning. Appreciate their pathogenesis and epidemiology. 2. Recognize morphology, culture and pathogenesis of Vibrio cholerae.
34	Diseases of the intestine IV (bowel obstruction and tumors) (Pathology)	<ol style="list-style-type: none"> 1. Provide a simplified classification of small and large intestinal tumors. 2. Describe polyps in terms of types and pathological features. 3. Describe the adenoma-carcinoma sequence and the two-hit hypothesis of development of colorectal carcinoma. 4. List the main diseases of appendix.
35	Embryology of the GIT II (Anatomy)	<ol style="list-style-type: none"> 1. Describe the common congenital abnormalities of the GIT.
36	Innervations and Lymphatic drainage of the GIT (Anatomy)	<ol style="list-style-type: none"> 1. Describe the nerve supply of different parts of the GIT from the mouth to the anus. 2. Describe the innervations of associated digestive organs (Liver, gall bladder, Pancreas, and spleen). 3. Describe the Lymphatic drainage and regional lymph nodes and major trunks of different parts of GIT and associated abdominal organs.
37	Antiemetics and drugs affecting gastric motility (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the mechanism of drug-induced vomiting. 2. List drug classes employed as antiemetics and the mechanism of action each class. 3. Explain the clinical implications of drugs affecting gastric emptying.
38	Viral hepatitis (Microbiology)	<ol style="list-style-type: none"> 1. Recognize the characteristics of various types of viruses affecting the liver (HAV, HBV, HCV and HEV), their modes of infection, laboratory diagnosis, and epidemiology.

39	Antidiarrheal drugs (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the therapeutic aims of antidiarrheal drugs. 2. List the major classes of antidiarrheal drugs and describe their mechanism of action. 3. Indicate the major adverse effects possibly encountered in patients using antidiarrheal drugs. 4. List major drug classes employed in the management of inflammatory bowel disease.
40 & 47	Digestion and Absorption in GIT (Physiology)	<ol style="list-style-type: none"> 1. Indicate the role of Brunner's glands in duodenum and of bile salts in fat digestion and absorption (mechanical, hormonal, and neural). 2. Describe the enterohepatic circulation of bile acids. 3. Explain the mechanisms of absorption of the principal inorganic components of diets. 4. Discuss the molecular basis of membrane transport processes. 5. Explain the factors, which determine whether a molecule is absorbed into the blood or into lymph. 6. Explain the mechanisms by which products of digestion of proteins, carbohydrates, and fats are absorbed into and through the cells lining the alimentary canal.
41	Epidemiology and prevention of colorectal cancers. (Public Health)	<p>Objectives: By the end of the lecture students will:</p> <ol style="list-style-type: none"> a. Gain knowledge on : <ol style="list-style-type: none"> i. Descriptive epidemiology of the disease in terms of : <ul style="list-style-type: none"> - identification of high risk groups - geographical distribution of disease - time trend of disease. ii. Risk factors of the disease in terms of : <ul style="list-style-type: none"> - lifestyle factors - genetic susceptibility - other host factors - related medical conditions b. Understand preventive and control measures of the disease including: <ol style="list-style-type: none"> i. Strategies of primary prevention. ii. Measures of screening and early detection of the disease.
42	Introduction to liver diseases (Pathology)	<ol style="list-style-type: none"> 1. Describe the general morphologic and functional patterns of hepatic injury 2. Understand the different liver diseases manifestation and terminology.
43	Cholestasis and cirrhosis (Pathology)	<ol style="list-style-type: none"> 1. Define cholestasis and list its main causes. 2. List the main causes of hepatic failure and describe the pathogenesis, pathologic features, and complications of this disorder. 3. Define cirrhosis and describe the pathologic features and complications of this condition.
44	Amoebiasis (Microbiology)	<ol style="list-style-type: none"> 1. Understand the differences between Entameoba histolytica and other amoeba, laboratory diagnosis, and treatment. 2. Describe both intestinal and extra intestinal infections.
45	Metabolic disease of liver (Biochemistry)	<ol style="list-style-type: none"> 1. Describe glycogen storage diseases 2. Describe inherited disorders of bilirubin metabolism 3. Discuss alpha-1 antitrypsin deficiency and its role in liver disorders 4. Lysosomal storage diseases 5. Hepatolenticular degeneration (Wilson's disease)
46	Schistosomiasis and Hydatid disease (Microbiology)	<ol style="list-style-type: none"> 1. Recognize the life-cycle, pathogenesis and the infection caused by Schistosoma mansion and Echinococcus granulosus. 2. Understand the epidemiology and treatment of Schistosomiasis and Hydatid disease.
48	Intestinal infections with parasites I (Microbiology)	<ol style="list-style-type: none"> 1. Understand infections arising from Ascaris, Enterobius, Trichuris and Toxocara. 2. Recognize the life cycle, morphology and treatment of each parasite.

49	Laxative agents (Pharmacology)	<ol style="list-style-type: none"> 1. Review the physiological aspects of normal bowel habits. 2. List the major classes of drugs employed as laxatives and describe their mechanism of action. 3. List the major indications and contraindications of laxatives. 4. Indicate the specific adverse effects associated with the commonly used laxative agents.
50	Hepatitis and alcohol liver disease (Pathology)	<ol style="list-style-type: none"> 1. Identify the different clinical syndromes of hepatitis including neonatal hepatitis, with emphasis on laboratory and pathologic features of each condition. 2. Describe the other non-infectious causes of hepatitis. 3. Discuss alcoholic liver disease as a classical example of toxin-induced liver disease in terms of pathogenesis and pathologic manifestations. 4. The causes, types, routes, and pathological features of hepatitis. 5. Describe the role of the liver biopsy in hepatitis.
51	Liver tumors (Pathology)	<ol style="list-style-type: none"> 1. List and describe the major tumors of the liver.
52	Epidemiology, prevention, and control of viral hepatitis. (Public Health)	<p>Objectives:By the end of the lecture students will:</p> <ol style="list-style-type: none"> a. Gain knowledge on: <ol style="list-style-type: none"> ii. The socio-demographic and the geographic distribution of the diseases. iii. Reservoir and mode of transmission b. Appreciate various levels of control of the diseases including: <ol style="list-style-type: none"> i. Preventive measures ii. Control of patients, contacts, and environment iii. Epidemic measures
53	Intestinal infections with parasites II (Microbiology)	<ol style="list-style-type: none"> 1. Understand infection caused by Taenia, Himenolepis nana, Ancylostoma and Fasciola, their laboratory diagnosis, epidemiology and treatment.
54	Drug-induced liver injury (DILI) (Pharmacology)	<ol style="list-style-type: none"> 1. Review the types of organ reactions in response to drug toxicities. 2. Classify the common types of (DILI) with example on each type. 3. Have a reasonable approach to the patient with presumed (DILI). 4. Be familiar with the management of some important cases of DILI e.g. paracetamol overdose. 5. List the major groups of drugs that should be avoided in liver cirrhosis
55	Disease of Extrahepatic Biliary I (Pathology)	<ol style="list-style-type: none"> 1. Circulatory disorders of the liver 2. Describe disorders of the liver
56	Diarrhea due to viruses (Microbiology)	<ol style="list-style-type: none"> 1. Identify the characteristics of Rota viruses and to a lesser extent those of adenoviruses 40 and 41 Norwalk, Coronaviruses and Astroviruses. 2. Describe the infection mechanism, define antibody response, and understand epidemiology, laboratory diagnosis, and control.
57	Disease of Extrahepatic biliary tract II (Pathology)	<ol style="list-style-type: none"> 1. Describe the common diseases of the intra and extrahepatic biliary diseases. 2. Describe the pathology of the major tumors of the biliary tree.
58	Diseases of exocrine pancreas (Pathology)	<ol style="list-style-type: none"> 1. List the main congenital anomalies of the pancreas. 2. Define cystic fibrosis and describe its etiology, pathogenesis, and pathologic features. 3. Describe the causes, pathogenesis, and pathologic feature of different forms of pancreatitis. 4. List and describe the major tumor of exocrine pancreas.

59	Diarrhea due to parasites (Microbiology)	5. Describe the morphology, life cycle, pathogenesis, epidemiology, and treatment of Giardia, lamblia, Strongyloides, Balantidium, and Cryptosporidium parvum.
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B. PRACTICAL LABORATORY SESSIONS:

#	PRACTICLE TITLE	OBJECTIVES
1	First anatomy practical session (Histology of the GIT I)	<ol style="list-style-type: none"> 1. Describe and study the microscopic structure of the tongue mucosa, muscles and papillae. 2. Describe the microscopic structure of the salivary glands. 3. Describe the microscopic structure of the esophagus.
2	Second anatomy practical session. (Anterior abdominal wall, inguinal region and upper GIT)	<ol style="list-style-type: none"> 1. Identify main structures of the oral cavity and associated salivary glands and ducts. Also identify the pharynx and its parts and main features and relations. 2. Identify the layers of the anterior abdominal wall including: <ul style="list-style-type: none"> - Skin. - Fascia (superficial and deep). - Abdominal wall muscles (origin, insertion and fascial coverings including the rectus sheath). 3. Identify and recognize the inguinal region including: <ul style="list-style-type: none"> Inguinal ligament formation. Inguinal canal (location, walls and contents). Deep and superficial inguinal canal openings (rings). The spermatic cord and its coverings.
3	Third anatomy practical session Peritoneal covering, esophagus and stomach	<ol style="list-style-type: none"> 1. Describe and identify the visceral and parietal peritoneal coverings including peritoneal layers, reflections, folding mesenteries, omenta, falciform ligament, fossae, pouches, spaces, and gutters. 2. Identify the abdominal esophagus including: location, muscular wall, relations, and vascular supply. 3. Identify and describe the stomach including: <ul style="list-style-type: none"> - Parts. - Surfaces and borders. - Epiploic foramin, location, borders and relation. - Vascular supply. 4. Living anatomy: <ul style="list-style-type: none"> • Describe the topographic planes and divisions of the anterior abdominal wall. • Identify and palpate iliac crest, costal margin, linea alba, rectus abdominis, subcostal margin, inguinal ligament and canal, deep and superficial inguinal rings. 5. Radiological anatomy including: <ul style="list-style-type: none"> - Plane abdomen X-ray. - Barium swallow and meal. 6. Describe the microscopic structure of the small intestine including jejunum and ileum. 7. Describe the microscopic structure of the appendix. 8. Describe the microscopic structure of cecum and large intestine.
4	fourth anatomy practical session (Lower GIT and abdominal organs)	<ol style="list-style-type: none"> 1. Identify and describe the duodenum including: parts and vascular supply. 2. Identify the jejunum and ileum and their distinguished features. 3. Identify and describe the cecum including: <ul style="list-style-type: none"> - Ileocecal valve. - Appendix. 4. Identify and describe the large intestine including: <ul style="list-style-type: none"> - Parts, length, and external structure. - Vascular supply. 5. Identify and describe the liver including: <ol style="list-style-type: none"> a. Location, lobes, borders, and relations. b. Liver peritoneal coverings and attachments

		<p>including triangular, coronary and falciform ligaments.</p> <p>c. The porta hepatis and vascular supply: portal vein, hepatic artery and the extra-hepatic biliary system.</p> <p>6. Identify and describe the gall bladder including:</p> <p>a. Parts, location, borders and relations.</p> <p>b. Vascular supply.</p> <p>7. Identify and describe the pancreas including:</p> <p>a. Parts, location, and relations.</p> <p>b. The main and accessory pancreatic ducts.</p> <p>8. Identify and describe the spleen including:</p> <p>a. Shape, surfaces, and relation.</p> <p>b. Vascular supply</p> <p>9. Describe the microscopic structure of the solid organs including</p> <p>a. Spleen</p> <p>b. Liver</p> <p>c. Pancreas.</p>
5	Fifth anatomy practical session (Imaging and Living anatomy of GIT and associated abdominal organs)	<p>Identify and describe:</p> <p>Abdominal aorta and its various main branches.</p> <p>Inferior vena cava; location and main tributaries.</p> <p>Describe the surface anatomy of all abdominal organs and vessels.</p> <p>Identify and describe the portal system.</p> <p>Radiological anatomy including:</p> <p>a. CT scan and MRI.</p> <p>b. Abdominal angiography.</p> <p>2. Identify and describe the salivary and biliary system including:</p> <p>a. Salivary glands and ducts.</p> <p>b. Pancreatic and biliary system.</p> <p>c. Surface anatomy of the above structures.</p>
6	First pathology practical session	<p>1. Describe the morphology of the more common disease of the salivary glands.</p> <p>Mucocele.</p> <p>Sialolithiasis.</p> <p>Sjogren's syndrome.</p> <p>Tumors.</p> <p>2. Describe the morphology of the following esophageal disease.</p> <p>Esophagitis (different types).</p> <p>Barret's esophagus and adenocarcinoma.</p> <p>Esophageal varices.</p> <p>Squamous cell carcinoma</p> <p>3. Describe the morphology of the following gastric disease.</p> <p>Gastritis.</p> <p>Gastric ulceration.</p> <p>Gastric adenocarcinoma</p>
7	Second pathology practical session	<p>1. Describe the morphology of the following small intestine disorders.</p> <p>Enteritis.</p> <p>Tumors (carcinoid, lipoma, adenocarcinoma, lymphoma)</p> <p>Celiac disease and other causes of malabsorption.</p> <p>2. Describe the morphology of the following large intestinal disorders.</p> <p>- Colonic polyps and adenomas.</p> <p>- Colonic adenocarcinoma.</p> <p>- Diverticular disease.</p>
8	Third pathology practical session	<p>1. Describe the morphology of inflammatory bowel disease and other forms of colitis and tutorial on them.</p> <p>a. Ulcerative colitis.</p> <p>b. Crohn's disease.</p> <p>c. Pseudomembranous colitis.</p>
9	Fourth pathology practical session	<p>1. Describe the morphology of the following liver disorders</p> <p>Steatosis.</p> <p>- Cirrhosis.</p>

		<ul style="list-style-type: none"> - Pigmentory. - Neoplasmas. - Hepatitis. <p>2. Describe the morphology of the following gall bladder and biliary disorders</p> <ul style="list-style-type: none"> - Chololelithiasis and cholecystitis. - Carcinoma of the gall bladder. - Cholestasis.
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10	First microbiology practical session (Stool examination)	<ol style="list-style-type: none"> 1. Examination of wet preparation for fecal leucocytes and RBCs. 2. Prepare stool culture for Salmonella and Shigella.
11	Second microbiology practical session (Parasites identification)	<ol style="list-style-type: none"> 1. Identify the following parasites in slides: Asacaris, Trichuris, Enterobius, Hookworm, Tinea saginata.
12	First pharmacology practical session (Enteral routes and dosage forms administered orally)	<ol style="list-style-type: none"> 1. List the enteral routes of drug administration. 2. Indicate the factors affecting the bioavailability of orally administered drugs. 3. Make comparison between different enteral routes of drug administration with respect to rate and extent of absorption, first- pass-hepatic effect, safety, and patient convenience. 4. Identify dosage forms of drugs suitable for enteral administration. 5. Describe the effect of enteral dosage forms on drug pharmacokinetics.

C-Small Group Discussion:

- 1) Peptic Ulcer Disease.
- 2) Liver Cirrhosis.

Summary of the teaching activities in the GIT System

Department	# of Lectures	# of Practical	Small Group Discussion
Anatomy	12	5	0
Physiology	7	0	0
Biochemistry	4	0	0
Pathology	17	4	0
Microbiology	9	2	0
Pharmacology	6	1	0
Public Health	2	0	0
Multidisciplinary	2	0	2
Total	59	12	2

**GIT System Lectures
Week 1 / Science Hall**

Time	SUN.	MON.	TUE.	WED.	THU.
11:15 – 12:05	Introduction (1&2)	Anatomy and histology of oral cavity, salivary glands. (Anatomy) 3	Diseases of the oral cavity (Pathology) 6	Diseases of the esophagus I (Pathology) 9	Anatomy of GIT hollow organs (stomach, duodenum, small and large intestines). (Anatomy) 12
12:15 – 1:05		Anatomy and histology of ,pharynx and esophagus (Anatomy) 4	Gastric and Intestinal secretions (Physiology)7	Diseases of the esophagus II (Pathology)10	Histology of the GIT Hollow organs (Anatomy) 13
1:15–2:05		Salivary secretion, swallowing and esophageal motility (Physiology) 5	The abdominal walls and inguinal region (Anatomy) 8	The abdominal cavity and peritoneum. (Anatomy) 11	Diseases of the stomach (gastritis) (Pathology) 14

GIT System Lectures
Week 2 / Science Hall

Time	SUN.	MON.	TUE.	WED.	THU.
11:15 – 12:05	Disease of stomach (peptic ulcer) (Pathology) 15	Anatomy of accessory organs of GIT (solid organs). (Anatomy) 18	Diseases of the intestines I (malabsorption) (Pathology)21	Embryology of the gut. I (Anatomy) 24	Drugs used in peptic ulcer disease I (Pharmacology)27
12:15 -1:05	Pathology of gastric tumors (Pathology) 16	Histology of accessory organs of GIT(solid organs) (Anatomy) 19	Role of liver in ethanol metabolism (Biochemistry)22	Liver and biliary secretion (Physiology)25	Diseases of the intestine II (inflammatory bowel diseases) (Pathology) 28
1:15 –2:05	Biochemistry of gastrointestinal fluid and enzyme (Biochemistry)17	Bacterial infections of GIT, gastritis and helicobacter pylori (Microbiology) 20	Pancreatic secretion (Physiology) 23	Blood supply of GIT and portal circulation Anatomy) 26(Gastric and intestinal motility (Physiology) 29

Week 2/ Practical

Time	Sunday	Monday	Tuesday	Wednesday
8.15-11.15	Patho. 1 A Anatomy 1 B	Anatomy 1 D	Patho. 1 C Anatomy 2 A	Anatomy 2 C
2.15-5.00	Anatomy 1 C	Patho. 1 B Anatomy 1 A	Anatomy 2 D	Patho. 1 D Anatomy 2 B

GIT System Lectures
Week 3 / Science Hall

Time	SUN.	MON.	TUE.	WED.	THU.
11:15 – 12:05	Diseases of the intestine III (ischemic bowel disease and bowel obstruction) (Pathology)30	Food poisoning Cholera (Microbiology)33	Innervations and Lymphatic drainage of the GIT (Anatomy)36	Antidiarrheal drugs (Pharmacology)39	Introduction to liver diseases (Pathology) 42
12:15 – 1:05	Drugs used in peptic ulcer disease II (Pharmacology)31	Disease of intestine IV bowel tumors (Pathology) 34	Antiemetics and drugs affecting gastric motility (Pharmacology)37	Digestion and Absorption in GIT I (Physiology) 40	Cholestasis and cirrhosis (Pathology)43
1:15 – 2:05	Liver function tests (Biochemistry)32	Embryology of the Gut II (Anatomy) 35	Viral hepatitis (Microbiology) 38	Epidemiology and prevention of colorectal cancers. (Public Health) 41	Amoebiasis (Microbiology) 44

Week 3 / Practical

Time	Sunday	Monday	Tuesday	Wednesday
8.15-11.15	Patho. 2 B Anatomy 3 C	Anatomy 3 D	Patho. 2 D Anatomy 4 A	Anatomy 4 B
2.15-5.00	Anatomy 3 A	Patho. 2 A Anatomy 3 B	Anatomy 4 C	Patho. 2 C Anatomy 4 D

GIT System Lectures
Week 4 / Science Hall

Time	SUN.	MON.	TUE.	WED.	THU.
11:15 – 12:05	Metabolic disease of liver (Biochemistry) 45	Intestinal infections with parasites I (Microbiology) 48	Liver tumors (Pathology) 51	Drug-induced hepatotoxicity (Pharmacology) 54	Disease of extrahepatic biliary tract II (Pathology) 57
12:15 – 1:05	Schistosomiasis and Hydatid disease (Microbiology) 46	Laxative agents (Pharmacology) 49	Epidemiology, prevention, and control of viral hepatitis. (Public health) 52	Disease of extrahepatic biliary tract I (Pathology) 55	Diseases of exocrine pancreas (Pathology) 58
1:15 – 2:05	Digestion and absorption in GIT II (Physiology) 47	Hepatitis and alcohol liver disease (Pathology) 50	Intestinal infections with parasites II (Microbiology) 53	Diarrhea due to Viruses (Microbiology) 56	Diarrhea due to parasites (Microbiology) 59

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Week 4 / Practical

Time	Sunday	Monday	Tuesday	Wednesday
8.15-11.15	Patho. 3 A Pharma. 1 B	Pharma. 1 A Anatomy 5 D	Patho. 3 C Pharma. 1 D	Pharma. 1 C Anatomy 5 B
2.15-5.00	Anatomy 5 C	Patho. 3 B	Anatomy 5 A	Patho. 3 D

**GIT System Lectures
Week 5 / Science Hall**

Time	SUN.	MON.	TUE.	WED.	THU.
11:15 – 12:05				Lab Microbiology 1	Lab Microbiology 2
12:15 – 1:05					
1:15 – 2:05					

Week 5 / Practical

Time	Sunday	Monday	Tuesday	Wednesday	Thursday
8.15-11.15					
2.15-5.00				Patho. 4 C	

**GIT System Lectures
Week 6**

Time	SUN.	MON.	TUE.	WED.	THU.
8:15 – 9:15	Small group discussion	Small group discussion	Small group discussion	Small group discussion	
9:30 – 10:30	Small group discussion	Small group discussion	Small group discussion	Small group discussion	
11:45 – 12:45	Small group discussion	Small group discussion	Small group discussion	Small group discussion	
1.00-2.00	Small group discussion		Small group discussion		

Week 6 / Practical

Time	Sunday	Monday	Tuesday
8.15-11.15	Patho. 4 D		Patho. 4 B
2.15-5.00		Patho. 4 A	

Clinical cases (PBL) to be discussed during the course

1. Case of Peptic Ulcer Disease:

A 46-year old woman known to have chronic arthritis, presents to the emergency room with vomiting of blood "hematemesis". Prior to that, she was complaining of upper abdominal pain, aggravated by hunger and relieved by antacids for several years. She takes pain killers for her joint pain only. Endoscopy was performed the same day she was admitted to the hospital, and was found to have a 1 cm clean-based ulcer in the duodenal bulb, without stigmata of active bleeding.

Questions:

1. Discuss mechanism of HCl secretion by the stomach.
2. What is hematemesis? What is hemoptysis?
3. What are the causes of PUD?
4. How does patient with PUD present?
5. What are the complications of PUD?
6. How to diagnose PUD?
7. What is role of H.pylori in the pathogenesis of PUD?
8. How to diagnose H.pylori infection?
9. What is the role of NSAIDs in the pathogenesis of PUD?
10. How to treat H.pylori infection?
11. How to treat and prevent NSAIDs –related?

2. Case of Liver Cirrhosis

A 65 year old man presents with fatigue and increased sleeplessness started 2 years ago. 25 years ago he was involved in a road traffic accident and was hospitalized for 10 days, during which he received 3 units of blood transfusion. He is currently on no medication, and denies any alcohol consumption, drug abuse or sexual misconduct. On examination, he is overweight but looks lethargic with mild swelling of the ankles and feet. Abdominal exam revealed splenomegaly, and positive for ascites.

His laboratory tests showed: Hemoglobin 9 g% (N=12-14 g%), Platelets count =79000/μl (N:150000-300000/μl, albumin=28 gm/L (N: 38-40 gm/L), bilirubin = 2.5 mg% (N=0.5-1 mg%), ALT=98 U/L (N: up to 30 U/L), AST=77 U/L (N- up to 33 U/L), Prothrombin time 45 second, INP (international normal ratio) = 1.7 (N=1). Abdominal ultrasonography showed coarse liver texture and nodularity with some ascites.

Questions:

1. Discuss the gross anatomy of the liver.
2. Discuss microscopic anatomy of the liver.
3. Discuss the blood supply and venous drainage of the liver.
4. What is the mostly likely cause of the liver disease in this patient?
5. What is the definition of cirrhosis?
6. What are the causes of the liver cirrhosis?
7. What are the complications of liver cirrhosis?
8. What is ascites? How does it develop?
9. What is esophageal varices?

10. What is hepatic encephalopathy?
11. What is the treatment of decompensated liver cirrhosis?

3. Case of Perforated Gastric ulcer

History

A 42 year old female was admitted to the hospital after visiting the emergency room complaining of severe epigastric pain and pain over her right shoulder. She had a history of gastric ulcer which had been treated previously with medication, but on questioning, she admitted that she had been so busy recently that she had forgotten to refill her prescription and had not taken her medication in some time. As a result of the history and physical findings, the physician suspected that she was suffering from a perforated gastric ulcer and she was referred to surgical department. When the surgeon examined the patient's stomach during the surgery, she found a small perforation on the posterior aspect of the body of the stomach near the lesser curvature. The perforation was repaired and, in addition, a vagotomy was performed. During the vagotomy, the surgeon found it necessary to cut the left gastric artery and ligate it.

Questions to consider:

1. What structures are at risk for damage by gastric juices if a perforation like the one described above occurs?
2. Why did the patient experience pain over her shoulder as well as in her abdomen?
3. What is a vagotomy and why was it performed?
4. Since the left gastric artery had to be ligated during the surgery, how will the stomach obtain an adequate blood supply?
5. Variations in the arteries of the celiac trunk are quite common, and thus are of particular interest to surgeons working in this area. Suppose the common hepatic artery originated from the left gastric artery in this case (an uncommon, but possible, variation) and the surgeon had to ligate the left gastric artery proximal to the bifurcation. How would this affect blood flow to the stomach? to other organs?

4. Case of Alcohol Misuse (alcohol and the digestive tract)

History

Chief Complaint: 62-year-old man with esophageal bleeding

History: Amjad Ali, a 62-year-old accountant, has had a "drinking problem" throughout most of his adult life. He drinks about a half-case of beer each day. He has lost several jobs over the years for drinking at the workplace or showing up for work drunk. He lost his driver's license for drunk-driving, and his drinking has placed a considerable strain on his marriage. He has been hospitalized on several occasions over the years. Amjad has a severe tremor in his hands (probably a result of excessive alcohol intake), which makes it very difficult for him to use a spoon, fork, and knife to eat.

His past medical records showed these notes

First Hospitalization:

You note that Amjad was hospitalized at age 32 with a complaint of vomiting up blood after a drinking binge that lasted seven days and was marked by excessive and repeated vomiting episodes. The vomitus was bright red. The hospital chart lists a diagnosis of "Upper GI bleed" due to a Mallory-Weiss tear. You look up "Mallory-Weiss tear" in an internal medicine textbook and see that it is defined as "a longitudinal tear in the mucosa at the gastroesophageal junction -- i.e. in the area of the lower esophageal sphincter -- caused by repeated vomiting."

Questions:

1. Why was the blood bright red, rather than the color of "coffee grounds"?
2. Based upon your knowledge of the vomiting reflex, why might severe vomiting tear the mucosa?

Second Hospitalization:

At age 36, Amjad was hospitalized again, this time with complaints of abdominal pain in the upper epigastric region (i.e. just below the xiphoid process of the sternum) and "coffee-grounds" emesis. He also complained of "heartburn" (a burning sensation in the area of the sternum) which was partially relieved with antacids. A diagnosis of "upper GI bleed due to gastritis and reflux esophagitis" is noted in the chart.

Questions:

1. What is causing the pain in the upper epigastric region? What barrier(s) normally protect the stomach lining from its own acid?
2. What is reflux esophagitis?
3. Can you think of any treatments for Amjad's problems? Explain the mechanisms for those treatments, based upon your knowledge of the regulation of gastric secretions.

Third Hospitalization:

At age 41, Amjad entered the hospital with complaints of a high fever, nausea, loss of appetite, and a dull, continual pain in the left side of the back. In addition, he had diarrhea of a particularly foul odor and yellow color. He had also lost 15 pounds over the last month and a half. Unfortunately, the page in the chart is torn, so you cannot read the diagnosis! But your memory of an anatomy and physiology course you took in college helps you figure out the possible causes of Amjad's problem.

Questions:

1. Excessive exposure to alcohol can cause inflammation of certain digestive organs, such as the stomach. Inflammation of which organ(s) might be causing Amjad's back pain?
2. Based upon the function of the organ in question, what is causing the "steatorrhea" and weight loss?

Fourth Hospitalization:

As you read on, you note that Amjad was hospitalized again at age 49 with dull pain in the right, upper quadrant of the abdomen, intermittent fever of 3 weeks duration, and a yellowing of the skin and the whites of the eyes. A diagnosis of "alcohol-induced hepatitis" is listed in the chart.

Questions:

- 1- Is the diagnosis consistent with the location of the abdominal pain? Explain your answer.
- 2- How are the liver and gallbladder connected to each other and to the duodenum?
- 3- If Amjad's liver disorder resulted in the production of a "gallstone," what danger might that present for his pancreas?
- 4- Why are Amjad's skin and eyes tinged yellow? What is this condition called?

Fifth Hospitalization:

At age 58, Amjad was rushed to the emergency room with severe vomiting of bright red blood. On examination, he had a blood pressure of 60 mmHg / 30 mmHg. The bleeding and vomiting started abruptly while Amjad was eating some hard, dry French bread. An endoscope (i.e. a flexible tube equipped with a camera) was placed down Amjad's esophagus, and a diagnosis of esophageal varices was quickly made.

Questions:

1. What are esophageal varices?
2. Where are esophageal varices typically located? (Be specific.)
3. On the hospital chart you see two other "secondary diagnoses" listed: (1) cirrhosis of the liver, and (2) portal hypertension.
4. Does this additional information help explain why Amjad developed esophageal varices? Explain your answer.
5. Why is bleeding particularly dangerous for Amjad?

3- Teaching and learning methods:

METHODS USED:

- Lectures
- Discussions
- Practical classes
- Multidisciplinary (Paediatrics & Medicine) lectures

4- Students Assessment methods:

4-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

4-B) Assessment Tools:

Exam	Day	Date
Practical	According to the group	
Final- Theory	To be decided by Registry office.	

4-C) WeightingSystem:

Examination	Marksallocated
Finalexam:	
s- Written	250
t- Practical	50
Total	300

4-D) Examinationdescription:

Examination	Description
Finalexam:	
s- Written	□ select(MCQs),Shortessay,cases,complete, crossmatching
t- Practical	

5.Recommended Text Books and Atlases:

- **Anatomy:**
 - Grays anatomy for students, Drake,Vogl, Mitchell
 - Clinical Anatomy for Medical Students. By R. S. Snell, latest edition.
 - Grants Atlas of Anatomy or any other Atlas of Human Anatomy.
 - Basic Histology. By L. Carlos Junqueira, latest edition.
 - Before we are born. By K. L. Morre and T. V. N. Persuade, latest edition.
 - Langman's medical embryology
 - Color textbook of histology Gartner and Hiatt
- **Physiology:**
 - Textbook of Medical physiology. By Guyton and Hall, 11th edition 2005.
 - Review of medical physiology. By WF Ganong 24th edition 2009..
- **Biochemistry:**
 - Delvin: Textbook of Biochemistry with Clinical correlations.
- **Pathology:**
 - Basic Pathology. By Kumar, Cotran and Robbins, latest edition.
 - Supplementary Departmental handouts.
- **Microbiology:**
 - Medical Microbiology. An Introduction to Infectious Diseases. By Sheries, latest edition.
- **Pharmacology:**
 - Textbook: Lippincott's Illustrated Reviews Pharmacology by Richard Harvey and Pamela Champe, 4th Edition, 2009 Reference Books:
 - The pharmacological Basis of Therapeutics Goodman and Gilman 11th Edition 2006.
 - Basis and Clinical Pharmacology B.G. Katzung 10th Edition 2007.
 - Pharmacology Rang, Dale, Ritter and Moore 6th Edition 2007.
- **Public Health:**
 - Supplementary Departmental handouts.



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine**

**Course Name: Musculoskeletal and Integumentary Systems
Code: MED 313**

A.Basic Information:

1. **Course title:**Musculoskeletal and Integumentary Systems
2. **Specialty:**M.B.B.S. program
3. **Department offeringthecourse:**Multidisciplinary
4. **Academic year:**third year first semester
5. **Dateof specification approval:**
6. **InternalEvaluator:**
7. **Allocated marks:** 300marks.
8. **Course duration:** 6 weeksof teaching.
9. **Credithours:** 6
10. **Teaching Approaches:**Integrated System Block with PBL

B)ProfessionalInformation:

1- OverallAimof the Course:

Upon succesful completion of this course students should be able to:

1. Identify and describe bones, muscles and joints of the upper, lower limbs and the vertebral column and give nerve supply and actions of the muscles associated with them.
2. Describe normal development and congenital abnormalities of limbs and vertebral column.
3. Understand the metabolism and the biochemical and molecular basis of diseases affecting muscles and bones.
4. Describe the mechanism of muscle contraction.
5. Describe and understand the mechanism of action, pharmacokenetics and therapeutic use and adverse effects of drugs that affect the musculo-skeletal system and the skin.
6. Understand the pathogenesis and pathological features of infections and diseases that affect bones, joints, muscles, soft tissue and the skin.
7. Understand the epidemiology and control of the common injuries that may affect the human musculo-skeletal and skin..
8. Describe the macroscopic and microscopic features of the skin and subcutaneous tissues.
9. The biochemical processes of normal skin and subcutaneous tissues.
10. Describe the commensals and pathogenic microbes affecting the skin, subcutaneous tissue and musculoskeletal system.
11. The pathological changes that occur in the skin, and the etiology, pathogenesis and pathologic features of selected major diseases of the skin.

2. Coursecontents(THEORY):

Unit	Topic	Specific Objectives
1	Introductory Case presentation for MSS	
2	Overview of the components of the MSS. (Anatomy)	<ol style="list-style-type: none"> 1. Discuss the components and functions of the MSS. 2. Describe the relation between bones and skeletal muscles in producing body movements. 3. Identify the major regions and compartments of upper and lower limbs. 4. Contrast the structural and functional classification of joints and identify factors that determine the degree of movement at a joint. 5. Briefly define and give the functions of a bursa and describe the sites of the major <u>bursas</u> in the upper and lower limbs.
3	The Skull (Anatomy)	<ol style="list-style-type: none"> 1. Describe different views of the skull externally and internally 2. Describe the base of the skull with major foramina with their contents.
4	Bones of the vertebral column. (Anatomy)	Describe the principle distinguishing features of: <ol style="list-style-type: none"> 1. Cervical vertebrae. 2. Thoracic vertebrae. 3. Lumbar vertebrae. 4. Sacrum. 5. Ribs. 6. Sternum.
5	Bones of the upper limb (Anatomy)	Describe the principle distinguishing features of: <ol style="list-style-type: none"> 1. Scapula 2. Clavicle 3. Humerus 4. Radius 5. Ulna 6. Carpus 7. Phalanges
6	Bones of lower limb (Anatomy)	Describe the distinguishing features of the following: <ol style="list-style-type: none"> 1. Hip bone 2. Femur 3. Tibia 4. Fibula 5. Tarsal bones 6. Phalanges
7,8,9	Muscle Physiology (Physiology)	<ol style="list-style-type: none"> 1. Overview of muscle mechanics 2. To list contractile proteins. 3. To describe the molecular mechanism of muscle contraction. 4. To define isometric and isotonic contraction. 5. To describe length tension relationship. 6. To describe the relation between load and velocity of contraction. 7. To understand force summation. 8. □To apply the above principles to cardiac muscle in health and disease. 9. To describe neuromuscular junction. 10. To understand motor unit. 11. To be familiar with types of muscle fibers. 12. To describe the effect of exercise and hormones on skeletal muscle. 13. To be familiar with electromyography. 14. To explain the effect of muscle denervation, 15. To explain rigor mortis and muscle fatigue.
10	Muscles of the trunk (Anatomy)	<ol style="list-style-type: none"> 1. List the chest muscles. 2. List the abdominal wall muscles. 3. Describe the attachments of the above mentioned muscles and their nerve supply.

		<ol style="list-style-type: none"> 4. Discuss the role of the chest and the abdominal wall muscles. 5. Describe the rectus sheath. 6. List the contents of the rectus sheath.
11	<p>Muscle relaxants</p> <p>(Pharmacology)</p>	<ol style="list-style-type: none"> 1. Review the transmission process at the neuromuscular endplate and the points at which drugs can modify this process. 2. Compare the pharmacodynamics and pharmacokinetics of nondepolarizing and the depolarizing neuromuscular blockers. 3. Describe the main indications, major adverse effects and drug interaction of nondepolarizing and depolarizing neuromuscular blockers.
12	<p>Muscles of the upper limb</p> <p>(Anatomy)</p>	<ol style="list-style-type: none"> 1. List the muscles that are attached to the scapula. 2. Describe the attachments of the above mentioned muscles and their nerve supply. 3. Discuss the intermuscular spaces related to the scapula and their contents. 4. List the rotator cuff muscles.
13	<p>Muscles of the upper limb</p> <p>(Anatomy)</p>	<ol style="list-style-type: none"> 1. List the muscles that are attached to the arm and forearm. 2. Describe the attachments of the above mentioned muscle and their nerve supply.
14	<p>Biochemistry of Bone and connective tissue and bone metabolism</p> <p>(Biochemistry)</p>	<ol style="list-style-type: none"> 1. Describe the biochemical structure of bone tissue, the collagen matrix and the hydroxyapatite cement. 2. List bone matrix proteins and describe their function. 3. Describe the Composition of calcified tissues, calcification in bones and teeth and formation of hydroxyapatite. 4. Understand the role of alkaline phosphatase, calcium and phosphate and vitamin D: 1,25-Dihydroxy-vit-D in bone formation and remodeling. 5. Review calcium and phosphate homeostasis.
15	<p>Muscles of the lower limb</p> <p>(Anatomy)</p>	<ol style="list-style-type: none"> 1. List the muscles of the gluteal region. 2. Describe the attachments of the gluteal region muscles and their nerve supply. 3. Describe the greater and lesser sciatic foramina and their contents.
16	<p>Muscles of the lower limb</p> <p>(Anatomy)</p>	<ol style="list-style-type: none"> 1. List the muscles of the thigh. 2. List the muscles of the leg. 3. Describe the attachments of the thigh and leg muscles and their nerve supply. 4. Describe the femoral triangle.
17	<p>Metabolic disorders and clinical biochemistry of muscle and bone</p> <p>(Biochemistry)</p>	<p>Discuss the markers for bone formation and Resorption and their clinical use in diagnosis Describe the molecular basis of:</p> <ol style="list-style-type: none"> 1. Duchene Muscular Dystrophy. 2. Glycogen storage diseases of muscle 3. Muscle Mitochondrial diseases. 4. Describe the molecular basis of Osteogenesis imperfecta and Ehler Danlos syndromes
18	<p>Axilla</p> <p>(Anatomy)</p>	<ol style="list-style-type: none"> 1. Define the axilla. 2. Describe the boundaries and borders of the axilla 3. List the contents of the axilla. 4. Explain the importance of the axilla.
19	<p>Shoulder joint</p> <p>(Anatomy)</p>	<ol style="list-style-type: none"> 1. Describe the components of the shoulder joint. 2. List the ligaments associated with the shoulder joint and their attachment. 3. Describe the muscles acting on the shoulder joint according to the type and movement they perform. 4. Describe the bursas in relation to the shoulder joint. 5. Describe the stability of the shoulder joint.

		<ol style="list-style-type: none"> List the blood supply and nerve supply of the shoulder joint. Describe the major palpable bony prominences of the shoulder joint. Describe the intermuscular spaces.
20	Paget's disease, Osteomyelitis and Bone tumors (Pathology)	<ol style="list-style-type: none"> Describe Paget's disease of bone Describe the pathogenesis and pathologic features of osteomyelitis. Describe bone tumors. Understand the classification of bone tumors. Discuss the commonest bone tumors.
21	Inguinal Region (Anatomy)	<ol style="list-style-type: none"> Define the inguinal region and inguinal ligament. Describe the inguinal canal. Describe the femoral sheath and its contents. List the types of Hernia.
22	Hip joint (Anatomy)	<ol style="list-style-type: none"> Describe the components of the hip joint. List the ligaments associated with the hip joint and their attachment. Describe the muscles acting on the hip joint according to the type and movement they perform. Describe the bursas in relation to the hip joint. Describe the stability of the hip joint. Describe the blood supply and nerve supply of the hip joint. Describe the major palpable bony prominences of the hip joint.
23	Diseases of skeletal muscles (Pathology)	<ol style="list-style-type: none"> Overview the histology of skeletal muscle. List the main types of the skeletal muscle diseases. Discuss the two main types of muscle atrophy. Discuss the main inflammatory myopathies. Discuss muscular dystrophy. Understand the pathogenesis and pathological features of Duchene and Becker muscular dystrophy.
24	Cubital and popliteal fossae (Anatomy)	<ol style="list-style-type: none"> Describe the cubital fossa. List the content of the cubital fossa. Understand the clinical importance of the cubital fossa Describe the popliteal fossa. List the content of the popliteal fossa. Understand the clinical importance of the popliteal fossa.
25	Antiinflammatory drugs I (Pharmacology)	<ol style="list-style-type: none"> Classify the anti-inflammatory drugs. Describe the indications of each class.
26	Antiinflammatory drugs II (Pharmacology)	<ul style="list-style-type: none"> Describe the mechanism of action, toxicity and ontraindications of drugs used in each class.
27	Soft tissue tumors (Pathology)	<ol style="list-style-type: none"> Describe the soft tissue tumors. List the types of soft tissue tumors Understand the importance of cytological and histological features of soft tissue tumors in identifying type and behavior
28	Elbow joint (Anatomy)	<ol style="list-style-type: none"> Describe the components of the elbow joint.. List the ligaments associated with the elbow joint and their attachment. List the muscles acting on the elbow joint according to the type and movement they perform. Describe the bursas in relation to the elbow joint. Describe the stability of the elbow joint. List the blood supply and nerve supply of the elbow joint. Describe the major palpable bony prominences of the elbow joint
29	knee joint (Anatomy)	<ol style="list-style-type: none"> Describe the components of the knee joint. List the ligaments associated with the knee joint and their attachment. List the muscles acting on the knee joint according to the type and movement they perform. Describe the bursas in relation to the knee joint.

		<ol style="list-style-type: none"> 5. Describe the stability of the knee joint. 6. List the blood supply and nerve supply of the knee joint. 7. Describe the major palpable bony prominences of the knee joint.
30	<p>Anaerobes and clostridium perfringens and Gas gangrene Trichinella Spiralis</p> <p>(Microbiology)</p>	<ol style="list-style-type: none"> 1. Describe the morphological, bacteroides and trichinella features, pathogenesis and virulent factors, laboratory diagnosis, treatment and prevention of clostridium perfringens which is the main cause of gas gangrene. 2. Describe the role of cl. Perfringens and Bacteroides in gas angrene and the role of Trichinella in muscle infection. Explain their laboratory diagnosis, pathogenesis and treatment. 3. Describe the morphological features, pathogenesis and virulent factors, laboratory diagnosis treatment and prevention of clostridium perfringens 4. Describe the role of aerobes in the formation of deep wound infection and abscess. 5. Describe the role of Trichinella in muscle infection and explain their laboratory diagnosis, pathogenesis and treatment. 6. Describe the role of bacteria in the pathogenesis of osteoarthritis arthritis, specimen collection identification and treatment.
31 32 33	<p>Hand + Foot</p> <p>(Anatomy)</p>	<ol style="list-style-type: none"> 1. Describe the components of the wrist joint. 2. List the ligaments associated with the wrist joint and their attachment. 3. List the muscles acting on the wrist joint according to the type and movement they perform. 4. Describe the bursas in relation to the wrist joint. 5. Describe the stability of the wrist joint. 6. List the blood supply and nerve supply of the wrist joint. 7. Describe the major palpable bony prominences of the wrist joint. 8. Describe the carpal tunnel and the flexor and extensor retinaculæ and the structures passing in relation to the retinaculæ> 9. Describe the snuffbox. 10. Describe the movement of the fingers. 11. List the muscles acting on the fingers. 12. Describe the movement of the toes. 13. List the muscles acting on the toes. 14. Describe the retinaculæ which are related to the foot and the structures passing in relation to the retinaculæ 15. Describe the four muscle layers of the foot. 16. Describe the arches of the foot. 17. Describe the components of the ankle joint. 18. List the ligaments associated with the ankle joint and their attachment. 19. List the muscles acting on the ankle joint according to the type and movement they perform.
34,35	<p>Development of the skull, spine and limbs</p> <p>(Anatomy)</p>	<ol style="list-style-type: none"> 1. Describe the development of: skull-Limbs-Vertebral column, Ribs, and sternum. 2. Discuss related congenital anomalies.
36	<p>Development of Muscular system.</p> <p>(Anatomy)</p>	<ol style="list-style-type: none"> 1. Describe the development of the skeletal muscles.
37	<p>Epidemiology of MSS injuries.</p> <p>(Public health)</p>	<ol style="list-style-type: none"> 1. Define : Epidemiology of accidents, hazards and injuries. 2. Distinguish between risk and hazard. 3. Identify the human, situational and environmental factors of accidents. 4. Identify risk factors, risk groups and incidence rate of MSS injuries. 5. Explain the factors that influence risk perception and risk acceptance of MSS injuries.
38	<p>Epidermis</p> <p>(Anatomy)</p>	<ol style="list-style-type: none"> 1. Describe the layers of the epidermis and development of integumentary system.
39	<p>Dermis</p> <p>(Anatomy)</p>	<ol style="list-style-type: none"> 1. Describe structure of the dermis , compare the structure and distribution of hair follicles, nails , sebaceous and sweat glands 2. Explain bases of skin color.

40	Bacterial infections of the skin. (Microbiology)	<ol style="list-style-type: none"> 1. Describe cultural characteristics of skin an pathogenesis of skin commensals and pathogens 2. Describe the antibiotic sensitivity of each organism (<i>Diphtheroids</i> ,<i>Staphylococci</i> , <i>Streptococci</i>,<i>Propionobacterium acnes</i> , <i>Mycobacteria</i> 3. Explain types, pathogens of would infection methods specimen collection for proper dignosis of types Bacteria and laboratory diagnosis.
41	Topical antimicrobial drugs and drugs of noninfective skin conditions (Pharmacology)	<ol style="list-style-type: none"> 1. Describe antibacterial agents, antifungal agents, antiviral agents and ectoparasitic ones. 2. Describe anti-inflammatory, topical corticosteroid, tarcompounds and keratolytic agents.
42	Viral infections of the skin. (Microbiology)	<ol style="list-style-type: none"> 1. Explain morphology and pathogenesis as well as diagnostic procedures of viruses infecting skin.
43	Acute inflammatory dermatoses (Pathology)	<ol style="list-style-type: none"> 1. Difine etiology, pathogenesis and pathologic features of urticaria, acute eczema , acne vulgaris and pathologic features of panniculitis.
44	Viral infection of the skin. (Microbiology)	<ol style="list-style-type: none"> 1. Describe the Herpe's and childhood exanthens.
45	Drugs of noninflammatory skin conditions (Pharmacology)	<ol style="list-style-type: none"> 1. Describe drugs employed in the treatment of acene, psoriasis affecting pigmentation. Acne preparations. Drugs for psoriasis. Antipruritic agents. Trichogenic agents. 2. Antiseborrhea agents.
46	Parasitic infecting the skin. (Microbiology)	<ol style="list-style-type: none"> 1. Discuss the parasites that infest the skin (Scabes <i>Leishmania</i> and <i>Onchocerca</i>). Briefly describe the life cycle, treatment and prevention of each parasite. 2. Describe parasites that infest the skin, their life cycle, treatment and prevention. (Scabes <i>Leishmania</i>, <i>Oncocerca</i> fleas, loaloo, and cutaneous larva migrans).
47	Introduction to clinical dermatology (Dermatology)	
48	Fungal infections of the skin (Microbiology)	<ol style="list-style-type: none"> 1. Describe the fungi that infect the skin and subcutaneous tissue, their identification and treatment (<i>Dermatophytes</i> , <i>Candida</i> and <i>Mycetoma agents</i>) 2. Describe the fungi that infect the skin, their clinical classification, their identification and treatment (cutaneous, subcutaneous and apportunistics).
49	Introduction to clinical orthopedics (Orthopedics)	
50	Pathology review	
51	Anatomy review	

b. Practical Laboratory Sessions:

#	PRACTICLE TITLE	OBJECTIVES
1	Anatomy Lab 1	<ul style="list-style-type: none"> - Identify the components of the skull. - Identify the components of the vertebral column. - Identify he parts of each particular vertebra. - Identify bony features of the vertebral column in X-rays. - Identify different parts of each bone in the upper limb. - Identify the features of the upper limb bones in X-rays. - Identify different parts of each bone in the lower limb. - Identify the features of the lower limb bones in X-rays.
2	Anatomy Lab 2	<ul style="list-style-type: none"> - Identify the muscles of the spine, trunk and abdominal wall muscles.
3	Anatomy Lab 3	<ul style="list-style-type: none"> - Identify the muscles of the upper limb: - Identify the muscles of the lower limb:-

4	Anatomy lab 4	- Identify the following 1. Thick skin and thin skin 2. The layers of epidermis 3. Components of the dermis 4. Epidermal derivatives
5	Pathology Lab 1	- Describe the morphology of the following soft tissue tumors 1. Lipoma and liposarcoma 2. Fibromatosis 3. Malignant fibrous histiocytoma 4. High grade sarcoma - Describe the morphology of the following bone tumors 1. Osteochondroma 2. Osteosarcoma 3. Chondrosarcoma 4. Ewing,s sarcoma 5. Giant cell tumor 6. Metastatic carcinoma - Describe the morphology of the following 1. Osteomyelitis 2. Paget,s disease of bone
6	Pathology Lab 2	Describe the main morphological features of the following skin diseases 1. Dermatitis and urticaria 2. Erythema multiform 3. Psoriasis 4. Lichen planus 5. Pimphigus vulgaris 6. Bullous pemphegoid 7. Dermatitis herpetiformis
7	Microbiology Lab Wound Culture	Describe types: 1. Describe specimen collection methods 2. Lists the most common aerobic and anaerobic organisms causing the infection and their laboratory identification.

Summary of the teaching activities

	# of Lectures	# of Practical	Small Group Discussion	Practical & Theory Review
Anatomy	25	4	1	3
Physiology	4			
Biochemistry	2		1	1
Pathology	6	2	1	3
Microbiology	6	1		1
Pharmacology	5		1	2
Public Health	1			
Introduction to clinical dermatology	1			
Introduction to clinical orthopedics	1			
Total	51	7	4	10

Clinical cases for small group discussions:

A 40-years-old woman visited her physician complaining of severe burning pain "pins and needles" in the hand and lateral fingers. The condition was becoming progressively worse and was more severe at night. She said she had experienced difficulty in buttoning up her clothes when dressing.

On physical examination, the patient pointed to the thumb, index, middle, and lateral half of the ring fingers as the area where she felt the discomfort.

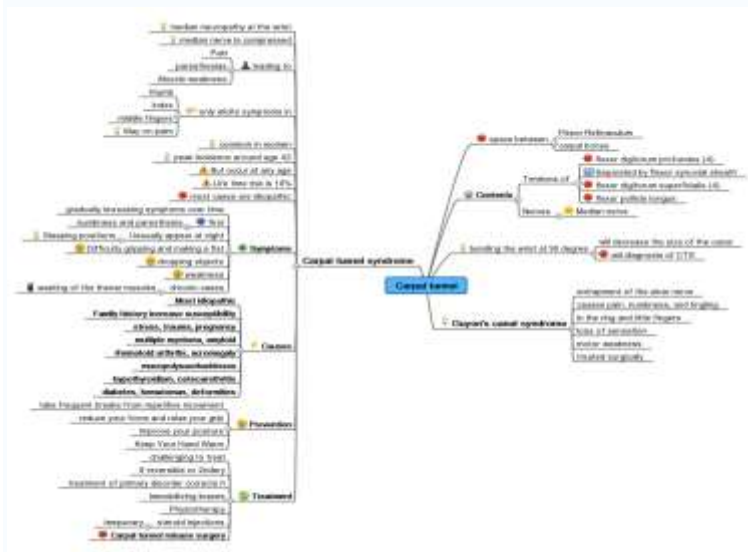
No objective impairment of sensation could be detected over the theaner muscle; however the sensation was mildly decreased in the lateral three and half finger.

The muscles of the theaner eminence appeared to have some wasting with less power compared to the other muscle of the hand manifested by weakness of resisted thumb abduction.

Q- What anatomic structure was diseased in this patient?

[eminence](#), weakness of the [flexor pollicis brevis](#), [opponens pollicis](#), [abductor pollicis brevis](#), as well as sensory loss in the distribution of the median nerve distal to the [transverse carpal ligament](#). There is a superficial sensory branch of the median nerve, which branches proximal to the TCL and travels superficial to it. This branch is therefore spared, and it innervates the palm towards the thumb.

Symptoms



[Mind Map](#) Showing Summary of [Carpal tunnel](#) Contents and Carpal tunnel syndrome

Many people who have carpal tunnel syndrome have gradually increasing symptoms over time. The first symptoms of CTS may appear when sleeping and typically include numbness and [paresthesia](#) (a burning and tingling sensation) in the thumb, index, and middle fingers, although some patients may experience symptoms in the palm as well. These symptoms appear at night because people tend to bend their wrists when they sleep, which further compresses the carpal tunnel.

Patients may note that they "drop things". It is unclear if carpal tunnel syndrome creates problems holding things, but it does decrease sweating, which decreases friction between an object and the skin.

In early stages of CTS individuals often mistakenly blame the tingling and numbness on restricted blood circulation. They may also be at ease and accepting of the symptoms and believe their hands are simply "falling asleep". In chronic cases, there may be wasting of the *thenar* muscles (the body of muscles which are connected to the thumb), weakness of palmar abduction of the thumb (difficulty bringing the thumb away from the hand).

Unless numbness or paresthesia are among the predominant symptoms, it is unlikely the symptoms are primarily caused by carpal tunnel syndrome. In effect, pain of any type, location, or severity with the absence of *significant numbness or paresthesia* is not likely to fall under this diagnosis.

Carpal tunnel syndrome can be misdiagnosed, and other syndromes can be misdiagnosed as carpal tunnel syndrome. A nerve conduction study or referral to a neurologist may be of benefit in clarifying the diagnosis.

Causes

Most cases of CTS are [idiopathic](#). CTS is sometimes associated with trauma, pregnancy, multiple myeloma, [amyloidosis](#), [rheumatoid arthritis](#), [acromegaly](#), [mucopolysaccharidoses](#), or [hypothyroidism](#).

Genetic

The most important risk factors for carpal tunnel syndrome are structural and biological rather than environmental or activity-related. The strongest risk factor is genetic predisposition.

Work related

The international debate regarding the relationship between CTS and repetitive motion in work is ongoing. The [Occupational Safety and Health Administration](#) (OSHA) has adopted rules and regulations regarding cumulative trauma disorders. Occupational risk factors of repetitive tasks, force, posture, and vibration have been cited. However, the [American Society for Surgery of the Hand](#) (ASSH) has issued a statement that the current literature does not support a

causal relationship between specific work activities and the development of diseases such as CTS.

The relationship between work and CTS is controversial; in many locations workers diagnosed with carpal tunnel syndrome are entitled to time off and compensation. Carpal tunnel syndrome results in billions of [dollars](#) of workers compensation claims every year.^{[[citation needed](#)]}

Some speculate that carpal tunnel syndrome is provoked by repetitive grasping and manipulating activities and that the exposure can be cumulative. It has also been stated that symptoms are commonly exacerbated by forceful and repetitive use of the hand and wrists in industrial occupations, but it is unclear if this refers to pain (which may not be due to carpal tunnel syndrome) or the more typical numbness symptoms.

A review of available scientific data by the [National Institute for Occupational Safety and Health](#) (NIOSH) indicated that job tasks that involve highly repetitive manual acts or specific wrist postures were associated with incidents of CTS, but causation was not established, and the distinction from work related arm pains that are not carpal tunnel syndrome was not clear. It has been proposed that repetitive use of the arm can affect the [biomechanics](#) of the upper limb or cause damage to tissues. It has also been proposed that postural and spinal assessment along with ergonomic assessments should be included in the overall determination of the condition. While addressing these factors has been found to improve comfort in some studies, there is no evidence that they affect the natural history of carpal tunnel syndrome.

Psychosocial factors

Studies have related activity-related upper extremity pain with psychological and social factors, but most such pains are nonspecific but commonly mislabeled as carpal tunnel syndrome. Psychological distress correlates with increased pain at work, as do other psychosocial stressors such as job demands, poor support from colleagues, and work dissatisfaction.^{[[9\]](#)}

As mentioned elsewhere on this page, carpal tunnel is characterized by numbness, not pain. Therefore, any associations between stress and carpal tunnel syndrome are debatable.

Trauma related

- [Fractures](#) of one of the arm [bones](#), particularly a [Colles' fracture](#).
- [Dislocation](#) of one of the [carpal bones](#).
- Strong blunt trauma to the wrist or lower forearm, incurred for example by using arm extremity to cushion a fall or protecting oneself from falling heavy objects.
- Internal [hemorrhaging](#) at the wrist.
- Deformities from abnormal [healing](#) of old bone fractures.
- Electrical burns may cause acute carpal tunnel syndrome.

Carpal tunnel syndrome associated with other diseases

Non-traumatic causes generally happen over a period of time, and are not triggered by one certain event. Many of these factors are manifestations of physiologic aging.

Examples include:

- Rheumatoid arthritis and other diseases that cause inflammation of the flexor tendons.
- With [pregnancy](#) and [hypothyroidism](#), fluid is retained in tissues, which swells the tenosynovium.
- [Acromegaly](#), a disorder of [growth hormones](#), compresses the nerve by the abnormal growth of bones around the hand and wrist.
- [Tumors](#) (usually benign), such as a [ganglion](#) or a [lipoma](#), can protrude into the carpal tunnel, reducing the amount of space. This is exceedingly rare (less than 1%).
- [Obesity](#) also increases the risk of CTS: individuals who are classified as obese ([BMI](#) > 29) are 2.5 times more likely than slender individuals ([BMI](#) < 20) to be diagnosed with CTS.
- *Double crush syndrome* is a speculative and debated theory which postulates that when there is compression or irritation of nerve branches contributing to the median nerve in the neck or anywhere above the wrist, this then increases the sensitivity of the nerve to compression in the wrist. There is little evidence, however, that this syndrome really exists.

Diagnosis

The reference standard for the diagnosis of carpal tunnel syndrome is [electrophysiological](#) testing. Patients with intermittent numbness in the distribution of the median nerve and positive Phalen's and Durkan's tests, but normal electrophysiological testing have—at worst—very mild carpal tunnel syndrome. A predominance of pain rather than numbness is unlikely to be due to carpal tunnel syndrome no matter the result of electrophysiological testing.

Clinical assessment by history taking and physical examination can support a diagnosis of CTS.

- [Phalen's maneuver](#) is performed by flexing the wrist gently as far as possible, then holding this position and awaiting symptoms. A positive test is one that results in numbness in the median nerve distribution when holding the wrist in acute flexion position within 60 seconds. The quicker the numbness starts, the more advanced the condition.
- [Tinel's sign](#), a classic, though less specific test, is a way to detect irritated nerves. Tinel's is performed by

lightly tapping the skin over the flexor retinaculum to elicit a sensation of tingling or "pins and needles" in the nerve distribution.

- [Durkan test](#), *carpal compression test*, or applying firm pressure to the palm over the nerve for up to 30 seconds to elicit symptoms has also been proposed.

Other conditions may also be misdiagnosed as carpal tunnel syndrome. Thus, if history and physical examination suggest CTS, patients will sometimes be tested electrodiagnostically with [nerve conduction studies](#) and [electromyography](#). The goal of electrodiagnostic testing is to compare the speed of conduction in the median nerve with conduction in other nerves supplying the hand. When the median nerve is compressed, as in CTS, it will conduct more slowly than normal and more slowly than other nerves. There are many electrodiagnostic tests used to make a diagnosis of CTS, but the most sensitive, specific and reliable test is the [Combined Sensory Index](#) (also known as [Robinson index](#)).

The role of [MRI](#) or [ultrasound imaging](#) in the diagnosis of carpal tunnel syndrome is unclear.

Prevention

Some^[who?] think that the current best evidence suggests that carpal tunnel syndrome is an inherent, structural disease determined primarily by one's genes. Therefore, carpal tunnel syndrome is probably not preventable. However, others^[who?] think it is preventable by developing healthy habits like avoiding repetitive stress, practicing healthy work habits like using ergonomic equipment and taking proper breaks, and early passive treatment like taking turmeric (anti-inflammatory), omega 3 fatty acids, and B vitamins. Those who favor activity as a cause of carpal tunnel syndrome speculate that activity-limitation might limit the risk of developing carpal tunnel syndrome, but there is little or no data to support these concepts and they stigmatize arm use in ways that risks increasing illness.

Recommendations for preventing carpal tunnel syndrome have poor scientific support. Several are listed here:

- Take frequent breaks from repetitive movement such as [computer keyboard](#) usage or use of browser-based games that encourage the user for excessive finger movement. Free software programs such as [Workrave](#) and [Xwrits](#) are available to remind users to take breaks and stretch their wrists.
- Reduce your force and relax your grip. Most people use more force than needed to perform many tasks involving the hands. If your work involves a cash register, for instance, hit the keys softly. For prolonged handwriting, use a big pen with an over-sized, soft grip adapter and free-flowing ink. This way you won't have to grip the pen tightly or press as hard on the paper.
- Take frequent breaks. Every 15 to 20 minutes give your hands and wrists a break by gently stretching and bending them. Alternate tasks when possible. If you use equipment that vibrates or that requires you to exert a great amount of force, taking breaks is even more important.
- Watch your form. Avoid bending your wrist all the way up or down. A relaxed middle position is best. If you use a keyboard, keep it at elbow height or slightly lower.
- Improve your posture. Incorrect posture can cause your shoulders to roll forward. When your shoulders are in this position, your neck and shoulder muscles are shortened, compressing nerves in your neck. This can affect your wrists, fingers and hands.
- Keep your hands warm. You're more likely to develop hand pain and stiffness if you work in a cold environment. If you can't control the temperature at work, put on fingerless gloves that keep your hands and wrists warm.

Treatment

There have been numerous scientific papers evaluating treatment efficacy in CTS. It is important to distinguish treatments that are supported in the scientific literature from those that are advocated by any particular device manufacturer or any other party with a vested financial interest. Generally accepted treatments, as described below, may include splinting or bracing, steroid injection, activity modification, physical or occupational therapy (controversial), medications, and surgical release of the transverse carpal ligament.

Immobilizing braces



A rigid splint can keep the wrist straight.

A wrist splint helps limit numbness by limiting wrist flexion. Night splinting helps patients sleep. There is no evidence that wrist splinting is disease modifying.

The importance of wrist [braces](#) and [splints](#) in the carpal tunnel syndrome therapy is known, but many people are unwilling to use braces. In 1993, The American Academy of Neurology recommend a non-invasive treatment for the CTS at the beginning (except for sensitive or motor deficit or grave report at EMG/ENG): a therapy using splints was indicated for light and moderate pathology. Current recommendations generally don't suggest immobilizing braces, but instead activity modification and [non-steroidal anti-inflammatory drugs](#) as initial therapy, followed by more aggressive options or specialist referral if symptoms do not improve.

Many health professionals suggest that, for best results, one should wear braces at night and, if possible, during the activity primarily causing stress on the wrists.

Localized steroid injections

Steroid injections can be quite effective for temporary relief from symptoms of CTS for a short time frame while a patient develops a longterm strategy that fits with his/her lifestyle. In certain patients, an injection may also be of diagnostic value. This treatment is not appropriate for extended periods, however. In general, medical professionals only prescribe local steroid injections until other treatment options can be identified. For most patients, surgery is the only option that will provide permanent relief.

Physiotherapy

There is little evidence to support the use of physiotherapy or occupational therapy techniques for carpal tunnel syndrome. They seem to be oriented primarily towards non-specific activity related pain rather than the numbness of carpal tunnel syndrome. The following comments regarding physical therapy seem to apply more to such chronic activity related pains than to verifiable idiopathic median nerve compression at the carpal tunnel.

Physiotherapy offers several ways to treat and control carpal tunnel syndrome. This procedure should be directed specifically towards the pattern of pain / symptoms and dysfunction assessed by the therapist. As such, it may include a range of modalities ranging from soft tissue massage, conservative stretches and exercises and techniques to directly mobilize the nerve tissue. It can also include the aforementioned immobilizing braces.

Clinically, sometimes a patient will present with a hand that is very inflamed and swollen with severe symptoms of pain, tingling and numbness and almost a fear of use because of the pain. In these cases a physiotherapist may focus on techniques to reduce the pain and inflammation, and exercises to encourage improved circulation. A comprehensive review of effectiveness of hand therapies in carpal tunnel management demonstrates that there is some valid scientific evidence for a range of therapeutic modalities. For instance, Body Awareness Therapy such as the [Feldenkrais method](#) has positive effects in relation to [fibromyalgia](#) and chronic pain. Structured exercise programs using these therapies to reduce wrist pain have been developed.

Occupational therapy

The comments provided in this section appear more suited to nonspecific activity related arm pains than to true carpal tunnel syndrome (verifiable idiopathic median nerve compression at the carpal tunnel).

Occupational therapy offers ergonomic suggestions to prevent worsening of the symptoms and occupational therapist facilitates hand functions through functional activities and helps to regain the functions which are necessary for the functional living through remedial adaptive approaches.

Any forceful and repetitive use of the hands and wrists can cause upper extremity pain. More frequent rest can be useful if it can be orchestrated into one's schedule. It has been shown that taking multiple mini breaks during the stressful activity is more effective than taking occasional long breaks. ^[citation needed] There are computer applications that aid users in taking breaks. All of these applications have recommended defaults, following the most effective average break configuration, which is a 30 sec. pause every 3 to 5 minutes (the more severe the pain, the more often one

should take this break). There are also programs that automatically click the mouse. Before investing in these types of programs, it's best to consult with a doctor and research whether computer use is causing or contributing to the symptoms, as well as getting a formal diagnosis.

More pro-active ways to reducing the stress on the wrists which will alleviate wrist pain and strain involve adopting a more ergonomic work and life environment. Switching from a [QWERTY](#) computer keyboard layout to a more optimised ergonomic layout such as [Dvorak](#) was commonly cited as beneficial in early CTS studies, however some [meta-analyses](#) of these studies claim that the evidence that they present is limited.

It is also important that one's body be aligned properly with the keyboard. This is most easily accomplished by bending ones elbows to a 90 degree angle and making sure the keyboard is at the same height as the elbows. Also it is important not to put physical stress on the wrists by hanging the wrist on the edge of a desk, or exposing the wrists to strong vibrations (e.g. manual lawn mowing). Position the computer monitor directly in front of your seat, so the neck is not twisted to either side when viewing the screen.^{[[citation needed](#)]}

Exercises that relax and strengthen the muscles of the upper back can reduce the risk of a *double crush* of the median nerve.

Massage is one of the most overlooked methods for treatment of the symptoms of CTS. The use of [myofascial release](#) and active stretch release can erase the pain, numbness, tingling and burning in minutes. Then following up with the stretches and exercises afore mentioned will lengthen the relief attained by these release techniques.

Medication

Using an over-the-counter anti-inflammatory such as [aspirin](#), [ibuprofen](#) or [naproxen](#) can be effective as well for controlling symptoms. Pain relievers like [paracetamol](#) will only mask the pain, and only an anti-inflammatory will affect inflammation.^{[[clarification needed](#)]} Non-steroidal anti-inflammatory medications theoretically can treat the swelling and thus the source of the problem. Oral steroids such as [prednisone](#) do the same, but are generally not used for this purpose because of significant side effects. Use of non-steroidal anti-inflammatory drugs may worsen asthma symptoms in some with a history of asthma, making the use of steroids such as prednisone the safer option for treating CTS. The most common complications associated with long-term use of anti-inflammatory medications are gastrointestinal irritation and bleeding. Also, some anti-inflammatory medications have been linked to heart complications. Use of anti-inflammatory medication for chronic, long-term pain should be done with doctor supervision.

A more aggressive pharmaceutical option is an injection of [cortisone](#), to reduce swelling and nerve pressure within the carpal tunnel. [Methylcobalamin](#) (vitamin B12) has been helpful in some cases of CTS.

Carpal tunnel release surgery



Scars from carpal tunnel release surgery. Two different techniques were used. The left scar is 6 weeks old, the right scar is 2 weeks old.

Release of the transverse carpal ligament is known as "carpal tunnel release" surgery. It is recommended when there is static (constant, not just intermittent) numbness, muscle weakness, or atrophy, and when night-splinting no longer controls intermittent symptoms. In general, milder cases can be controlled for months to years, but severe cases are unrelenting symptomatically and are likely to result in surgical treatment.

Procedure

In carpal tunnel release surgery, the goal is to divide the [transverse carpal ligament](#) in two. This is a wide ligament that runs across the hand, from the scaphoid bone to the hamate bone and pisiform. It forms the roof of the carpal tunnel, and when the surgeon cuts across it (i.e., in a line with the ring finger) it no longer presses down on the nerve inside, relieving the pressure.¹

There are several carpal tunnel release surgery variations: each surgeon has differences of preference based on their personal beliefs and experience. All techniques have several things in common, involving brief [outpatient](#) procedures; palm or wrist incision(s); and cutting of the transverse carpal ligament.

The two major types of surgery are open carpal tunnel release and [endoscopic carpal tunnel release](#). Most surgeons historically have performed the open procedure, widely considered to be the gold standard. However, a growing number of surgeons now are offering endoscopic carpal tunnel release, which has been available since the 1990s. Open surgery involves an incision somewhere on the palm about an inch or two in length. Through this incision the

skin and subcutaneous tissue is divided followed by the palmar fascia and ultimately the transverse carpal ligament. Endoscopic techniques involve one or two smaller incisions (less than half inch each) through which instrumentation is introduced including a synovial elevator, probes, knives and an endoscope used to fully visualize the underside of the transverse carpal ligament. The endoscopic methods do not divide the subcutaneous tissues or the palmar fascia to the same degree as the open method does.

Many studies have been done to determine whether the perceived benefits of a limited endoscopic or arthroscopic release are truly significant. Brown et al. did prospective, randomized, multi-center study and found no significant differences between the two groups with regard to the secondary quantitative outcome measurements. However the open technique resulted in more tenderness of the scar than did the endoscopic method. A prospective randomized study done in 2002 by Trumble revealed that good clinical outcomes and patient satisfaction are achieved more quickly when the endoscopic method of carpal tunnel release is used. Single-portal endoscopic surgery is a safe and effective method of treating carpal tunnel syndrome. There was no significant difference in the rate of complications or the cost of surgery between the two groups. However the open technique resulted in greater scar tenderness during the first three months after surgery as well as a longer time until the patients could return to work. <http://www.ejbs.org/cgi/content/abstract/84/7/1107>

Some surgeons have suggested that in their own hands [endoscopic carpal tunnel release](#) has been associated with a higher incidence of median nerve injury, and for this reason it has been abandoned at several centers in the United States. For example, at the 2007 annual meeting of the American Society for Surgery of the Hand, during the "Journal of Retraction" event, one former advocate of endoscopic carpal tunnel release, Thomas J. Fischer, MD, publicly retracted his advocacy of the technique, based on his assessment that the benefit of the procedure (slightly faster recovery) did not outweigh the risk of injury to the median nerve. Despite these views many other surgeons have embraced limited incision methods and it is considered to be the procedure of choice for many of these surgeons with respect to idiopathic carpal tunnel syndrome. Supporting this are the results of some of the previously mentioned series which cite no difference in the rate of complications for either method of surgery. Thus there has been broad support for either surgical procedure: open or endoscopic carpal tunnel release using a variety of devices or incisions with the knowledge that the primary goal of any carpal tunnel release surgery is to divide the transverse carpal ligament and the distal aspect of the volar ante brachial fascia thereby decompressing the median nerve. <http://orthoinfo.aaos.org/topic.cfm?topic=A00005>

All of the surgical options (when performed without complication) typically have relatively rapid recovery profiles (weeks to a few months depending on the activity and technique), and all usually leave a cosmetically acceptable scar.

Efficacy

Surgery to correct carpal tunnel syndrome has a high success rate. Up to 90% of patients were able to return to their same jobs after surgery. In general, endoscopic techniques are as effective as traditional open carpal surgeries, though the faster recovery time typically noted in endoscopic procedures is felt by some to possibly be offset by higher complication rates. Success is greatest in patients with the most typical symptoms. The most common cause of failure is incorrect diagnosis, and it should be noted that this surgery will only mitigate carpal tunnel syndrome, and will not relieve symptoms with alternative causes. Recurrence is rare, and apparent recurrence usually results from a misdiagnosis of another problem. Complications can occur, but serious ones are infrequent to rare.

Carpal tunnel surgery is usually performed by a [hand surgeon](#), [orthopaedic](#) or [plastic surgeon](#); some [neurosurgeons](#) and general surgeons also perform the procedure.

Long term recovery

Most people who find relief of their carpal tunnel symptoms with conservative or surgical management find minimal residual or "nerve damage". Long-term chronic carpal tunnel syndrome (typically seen in the elderly) can result in permanent "nerve damage", i.e. irreversible numbness, muscle wasting and weakness.

While outcomes are generally good, certain factors can contribute to poorer results that have little to do with nerves, anatomy, or surgery type. One study showed that mental status parameters, alcohol use, yield much poorer overall results of treatment.

Many mild carpal tunnel syndrome sufferers either change their hand use, pattern, or posture at work or find a conservative, non-surgical treatment that allows them to return to full activity without hand numbness or pain, and without sleep disruption. Some find relief by adjusting their repetitive movements, the frequency with which they do the movements, and the amount of time they rest between periods of performing the movements. Other people end up prioritizing their activities and possibly avoiding certain hand activities so that they can minimize pain and perform the essential tasks. Keyboard re-mapping software can help people whose condition is aggravated by one-handed key strokes involving a combination of the Control, Shift, or Alt keys and an alpha-numeric key. Programs such as [Autohotkey](#) allow a person to disable key combinations while they train themselves to use two hands to perform the offending key strokes.

Recurrence of carpal tunnel syndrome after successful surgery is rare. If a person has hand pain after surgery, it is most likely not due to carpal tunnel syndrome. It may be the case that a person who has hand pain after carpal tunnel release was diagnosed incorrectly, such that the carpal tunnel release has had no positive effect upon the patient's symptoms.

MSS and Integumentary System

Time Table/Week 1

Time	Sun	Mon	Tue	Wed	Thur
11:15-12:05	Introductory Case Presentation	Overview of the Components of the MSS. (Anatomy)	Muscle Physiology (II) (Physiology)	Muscle Relaxants (Pharmacology)	Biochemistry of the bone and connective tissue (Biochemistry)
12:15-1:05		Muscle Physiology (I) (Physiology)	Bones of the upper limb (Anatomy)	Muscles of the trunk (Anatomy)	Muscle of upper limb (Anatomy)
1:15-2:05		Bones of the vertebral column (Anatomy)	Muscle Physiology (III) (Physiology)	Muscles of the upper limb (Anatomy)	Bones of the lower limb (Anatomy)

MSS and Integumentary System

Time Table/Week 2

Time	Sun	Mon	Tue	Wed	Thur
11:15-12:05	Types of muscle fibers (Physiology)	Metabolic disorders of muscle and bone (Biochemistry)	Paget's Disease, osteomyelitis and bone tumors (Pathology)	Disease of skeletal muscles (Pathology)	Soft tissue tumors (Pathology)
12:15-1:05	Muscles of the lower limb (Anatomy)	Axilla (Anatomy)	Inguinal region & hernia. (Anatomy)	Elbow joint and cubital fossa (Anatomy)	Knee joint & popliteal fossa. (Anatomy)
1:15-2:05	Muscles of the lower limb (Anatomy)	Shoulder joint (Anatomy)	Hip joint (Anatomy)	Antirheumatoid drugs (Pharmacology)	Hand & foot I (Anatomy)

MSS and Integumentary System

Time Table/Week 3

Time	Sun	Mon	Tue	Wed	Thur
11:15-12:05	Anaerobes, gas gangrene and Trichenella (Microbiology)	Embryology of the skeletal system I (Anatomy)	Epidemiology of skeletal system injuries (Public Health)	Bacterial infection of the skin (Microbiology)	Acute inflammation of skin (Pathology)
12:15-1:05	Hand & Foot (II) (Anatomy)	Embryology of the skeletal system (II) (Anatomy)	Embryology of the skeletal system (III) (Anatomy)	Topical antimicrobial drugs (Pharmacology)	Drugs of non infective skin (Pharmacology)
1:15-2:05	Hand& Foot (III) (Anatomy)	Pathology	Epidermis (Anatomy)	Viral infection (I) (Microbiology)	Dermis (Anatomy)

MSS and Integumentary System

Time Table/Week 4

Time	Sun	Mon	Tue	Wed-	Thur
11:15-12:05	Chronic inflammatory dermatosis and bullous disease (pathology)	Introduction to clinical dermatology (Dermatology)	Introduction to clinical orthopedics (Orthopedic)		
12:15-1:05	Drugs of non-inflammatory skin conditions pharmacology	Fungal infection of the skin. (Microbiology)	Pathology		
1:15-2:05	Parasitic infection of the skin (Microbiology)	Viral infection (II) (Microbiology)	Review (Anatomy)		

Small Group Discussions

A total of 20 subgroups will attend a small group discussion after finishing all theory and practical sessions.

Time	Sun	Mon	Tue	Wed
8-9	Small group discussion	Small group discussion	Small group discussion	Small group discussion
9-10	Small group discussion	Small group discussion	Small group discussion	Small group discussion
10-11	Small group discussion	Small group discussion	Small group discussion	Small group discussion

3-Teachingandlearningmethods:

METHODS USED:

- Lectures
- Discussions
- Practical classes
- Multidisciplinary (Paediatrics & Medicine) lectures

4- StudentsAssessmentmethods:

4-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

4-B) Assessment Tools:

Exam	Day	Date
Practical	According to the group	
Final- Theory	To be decided by Registry office.	

4-C) WeightingSystem:

Examination	Marksallocated
Finalexam:	
u- Written	300
v- Practical	100

Total	400
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5-D) Examinationdescription:

Examination	Description
Finalexam: u- Written v- Practical	<input type="checkbox"/> select(MCQs),Shortessay,cases,complete, crossmatching

5-)Recommended Text Books & Atlases:

1. Anatomy:

- Principles of Human Anatomy. By G.J.Tortora, 8th. edition 1999.(or latest)
- Clinical Anatomy for Medical Students. By R.S. Snell, 4th edition (or latest) OR essential clinical anatomy by Moore and Agur.
- Grants Atlas of Anatomy or any other good colored Atlas of Human Anatomy.
- Basic Histology 9th edition by Junqueira.
- Any good Atlas of Human Histology.
- Before we are born. By K.L. Moore and T.V.N. Persaud, 6th edition 2003. (or latest).

2. Physiology:

- Textbook of Medical Physiology. By Guyton & Hall, 9th. edition.

3. Biochemistry:

- Harper's Biochemistry. By Robert K. Murray and Co., 1999.
- Supplementary Departmental Handouts.

4. Pharmacology:

- Lippincott's Illustrated Reviews:Pharmacology, 2nd edition. 2000.

5. Pathology:

- Basic Pathology. By Kumar, Cotran & Robbins, 6th edition, 1997.

6. Microbiology:

- Medical Microbiology. An Introduction to Infectious Diseases. By Sheries, latest edition.

7. Public Health:

- Supplementary Departmental handouts.



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Community Medicine**

**Course Name: Community MedicineII
Code: MED 321**

A) Basic Information

1. **Course title:**Community Medicine II
2. **Specialty:**M.B.B.S. program
3. **Department offering the course:**Community Medicine Department
4. **Academic year:**Second semester of third year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:**Prof. Dr. -----
7. **Allocated marks:** 125 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	2 credit hrs=30 hrs
2- Practical	0.5 credit hrs=15 hrs

B) Professional Information:

1-Overall Aim of the Course: this course aims to:

- Provide the undergraduate with educational experience necessary for further practice in field of public health through providing:
- Basic scientific knowledge essential to practice medicine at the primary level of health, dealing with health problems commonly met-with in clinical practice with proper awareness of the social and community context of healthcare.
- Basic knowledge of epidemiology of the diseases.

2-Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

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

2.1.1. **Mention** the basic issues for promoting health, preventing & controlling disease and disability

2.1.2. **Describe** the basic issues for health & safety for the patients & themselves during undergraduate training and post-graduate practice.

2.2. Practical and Clinical Skills

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

2.2.1 **Establish** a strategy for prevention and control of any health problem.

2.2.2. **Conduct** counseling sessions for prevention & control of different conditions for healthy individuals, for patients as well as their families.

2.3. Communication skills:

By the end of the program the graduate will be able to:

2.3.1. **Demonstrate** Respect for college's right & involve them in care takers in management decisions.

2.3.2. **Demonstrate** Respect to all colleges irrespective of their socioeconomic level, culture

2.3.3. **Demonstrate** Respect for right researches' and involve them and/or their in management decisions.

2.3.4. **Respect** the role and the contributions of other health care

professionals regardless their degrees or rank (top management, subordinate or colleague).

2.4. Intellectual Skills:

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

2.4.1. **Combine** the clinical and investigational data base to be efficient in clinical problem solving.

2.4.2. **Analyze** all sources of information in addition to the patient interview to Interpret and evaluate the medical history. Such sources include family or friends, medical records and other health care professionals, to overcome limitations regarding information.

2.4.3. **Adopt** the questioning approach to own work & that of others to solve clinical problems.

2.4.4. **Formulate** a research hypothesis & questions.

2.4.5. **Analyze** and **interpret** medical data precisely

2.5. General and transferable Skills:

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

2.5.1 **Establish** life-long self-learning required for continuous professional development.

2.5.2 **Use** the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

2.5.3 **Retrieve**, manage, and manipulate information by all means, including electronic means.

2.5.4 **Present** information clearly in written, electronic and oral forms.

2.5.5 **Establish** effective interpersonal relationship to Communicate ideas and arguments.

4- Course contents:

Subject	Lectures (hrs)	rounds (hrs)	Total (hrs)
-COMMUNICABLE DISEASES:- <input type="checkbox"/> Air borne infections (Diphtheria, Measles, Mumps, Rubella, Chicken pox, Smallpox, Influenza, Avian flu, Swine flu, Pertussis, T.B, Meningitis & streptococcal infections) <input type="checkbox"/> Foodborne infections (Hepatitis A, Typhoid fever, Paratyphoid, Cholera,	21	15	36
Diarrheal diseases, Desenteries, gastroenteritis, Brucellosis, Poliomyelitis & food poisoning and food borne parasitic diseases) <input type="checkbox"/> Contact infections (Rabies, Schistosomiasis, STDs, AIDS, Tetanus & gas gangrene, Anthrax & leprosy & Q fever) <input type="checkbox"/> Arthropod borne infections (Filariasis, Leshmaniasis, Malaria, Rift valley fever, Yellow fever,			
-NON COMMUNICABLE DISEASES:- <input type="checkbox"/> C.V.Ds & hypertension <input type="checkbox"/> Cancer <input type="checkbox"/> D.M. <input type="checkbox"/> Smoking <input type="checkbox"/> Injuries	7	-	7
- DEMOGRAPHY: <input type="checkbox"/> Definition <input type="checkbox"/> Population pyramid <input type="checkbox"/> Population growth & overpopulation	2	-	2
Total	30	15	45

4-Teachingandlearningmethods:

METHODS USED:

- 1- Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- 2- Lectures and/or handouts - are not to replace the main source of information, that is the textbook.
- 3- Labs are group activities where:
 - Group discussions are very much encouraged and field visit.

TEACHINGPLAN:

Lectures: 30 lectures

Smallclasses: 15 practicalclasses

Time plan:

Item	Timeschedule	Teaching hours
Lectures	2 times/week/15weeks (2 C. hours/week)	30hours
Practicalclasses	1 times/week/ 15week (0.5 C. hours/week)	15 hours
Total	2.5 C. hours /week/15 week	45hours

5- StudentsAssessmentmethods:

5-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) WeightingSystem:

Examination	Marksallocated
3- Finalexam:	
a- Written	100
b- Practical	25
Total	125

5-D) Examinationdescription:

Examination	Description
Finalexam: a-Written	<input type="checkbox"/> select(MCQs),Shortessay,cases,complete, crossmatching

6-Listofreferences:

6.1-Basicmaterials:

6.2- Essentialbooks(textbooks):

KhalilIF,1999:CommunityMedicine.CairoUniversity

6.3- Recommendedbooks:

MaxcyRL,2008: Publichealthandpreventive medicine

6.4- Periodicals,Web

<http://www.Winhttp://www.pubmed.com>.<http://sciencedirect.com>

Internationaljournalof epidemiology

7- FACILITIESUSEDFOR TEACHINGANDLEARNING:

Facilities which willbeusedfor teachingthiscourseinclude:

- Lecturehall
- Datashow
- Smartboard
- Educationalvideos
- Posters

Coursecoordinator: Prof.Dr./
HeadofDepartment:Prof.Dr./



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine**

**Course Name: Urinary and Reproductive system
Code: MED 322**

A)Basic Information:

1. **Course title:**Urinary and Reproductive system
2. **Specialty:**M.B.B.S. program
3. **Department offeringthecourse:**Multidisciplinary
4. **Academic year:**third year second semester
5. **Dateof specification approval:**
6. **InternalEvaluator:**
7. **Allocated marks:** 400marks.
8. **Course duration:** 8 weeksofteaching.
9. **Credithours:** 8
10. **Teaching Approaches:**Integrated System Block with PBL

B)ProfessionalInformation:

1- OverallAimof the Course:

Upon succesful completion of this course students should be able to:

1. Describe the gross morphology of different organs forming the Urinary and Reproductive System.
2. Understand the normal development of the Urinary and Reproductive System and its congenital anomalies.
3. Discuss the vasculature, lymphatic drainage and innervation of different parts of the Urinary and Reproductive System.
4. Understand various functions of the Urinary and Reproductive System.
5. Describe the microscopic appearance of different components of the Urinary and Reproductive System.
6. Discuss the microorganisms that infect the Urinary and Reproductive System.
7. Understand the pathogenesis of various diseases of the Urinary and Reproductive System.
8. List and describe the pharmacology of various drugs acting on the Urinary and Reproductive System.
9. Understand the bases of the inherited diseases.

2. Coursecontents:a. theory

#	Lecture Title	Lecture Objectives
1	Introductory case presentation for the urinary part of the system (Multidisciplinary)	<ol style="list-style-type: none"> 1. Understand the general outline of the urinary system. 2. Be familiar with the modalities of teaching throughout the course. 3. Acknowledge the important relation between normal and abnormal structure and function. 4. Appreciate the importance of basic sciences in clinical application.
2	General topographic anatomy of the urinary system. (Anatomy)	<ol style="list-style-type: none"> 1. Overview of the urinary system. 2. Kidney: understand its gross appearance, location in the body, relation to important organs in the abdomen. 3. Describe the shape of the kidney, renal capsule dimentions, surfaces, poles and the perirenal fat pad. 4. Understand the gross appearance of the internal structures: cortex,

		<p>medulla, calicies and pelvis.</p> <ol style="list-style-type: none"> 5. Understand the blood supply and how it is distributed, the venous drainage and how it is collected. 6. Discuss the lymphatic drainage and nervous control of the kidney.
3	Gross anatomy of the urinary system, blood vessels, lymphatic drainage and innervation. (Anatomy)	<ol style="list-style-type: none"> 1. Understand the anatomical structure of the ureter and its location in the body. 2. Describe how pain is referred from both kidneys and ureters. 3. Understand the blood supply, venous drainage and lymphatics of the urinary system. 4. Discuss the innervation of different parts of the urinary system, with special attention to the nervous control of urinary bladder.
4	Embryology of the urinary system. (Anatomy)	<ol style="list-style-type: none"> 1. Understand the development of the kidney and related organs of the urinary system. 2. Define the pronephrons, mesonephrons and metanephrons. 3. Understand the major and common congenital abnormalities in the urinary system.
5	Histology of the kidney. (Anatomy)	<ol style="list-style-type: none"> 1. Describe the normal microscopic appearance of the different parts of the kidney including cortex, medulla, juxtaglomerular apparatus and the distribution of the vasculature within the kidney. 2. List the different parts of the nephron with the details of each part.
6	Congenital and cystic diseases of the kidney. (Pathology)	<ol style="list-style-type: none"> 1. Define the main congenital diseases of the kidney. 2. Understand different types, pathogenesis, morphology, and presentation of cystic diseases of the kidney.
7	Glomerular filtration (GF). (Physiology)	<ol style="list-style-type: none"> 1. Review the functions of the nephron. 2. Understand the process of renal blood flow and glomerular filtration. 3. Understand the glomerular membrane, and the dynamics of glomerular filtration. 4. List the factors that affect glomerular filtration rate (GFR).
8	Reabsorption and secretion. (Physiology)	<ol style="list-style-type: none"> 1. Understand the transport and the pathways of reabsorption. 2. Discuss the reabsorption of water and electrolytes. 3. Discuss the reabsorption of glucose, urea, creatinine and protein.
9	Special aspects of renal metabolism. Role of kidney in acid base balance. (Biochemistry)	<ol style="list-style-type: none"> 1. Discuss urea and creatinine metabolism. 2. Understand the role of kidney in the regulation of hydrogen ions and bicarbonate buffer system. 3. Discuss amino acids absorption by the kidney and their disorders.

10	Regulation of the GF and renal-blood flow (RBF). (Physiology)	<ol style="list-style-type: none"> 1. Understand the autoregulation and tubuloglomerular feedback. 2. Understand the juxtaglomerular apparatus and its role in renin-angiotensin system. 3. Understand the glomerulotubular balance.
11	Glomerulonephritis. (Pathology)	<ol style="list-style-type: none"> 1. Discuss the pathogenesis of glomerulonephritis. 2. Recognize the basic reactions of glomerulus to injury. 3. List the different renal syndromes associated with renal Pathology.
12	Nephritic syndrome. (Pathology)	<ol style="list-style-type: none"> 1. Discuss the manifestations and mechanism of nephritic syndrome. 2. List the types of glomerulonephritis associated with nephritic syndrome. 3. Discuss the etiology, pathogenesis, morphology and clinical features of the common types of glomerulonephritis leading to nephritic syndrome.
13	Nephrotic syndrome. (Pathology)	<ol style="list-style-type: none"> 1. List the components of nephrotic syndrome. 2. Discuss the pathogenesis of nephrotic syndrome.

		<ol style="list-style-type: none"> List the main causes of nephrotic syndrome. Discuss the etiology, morphology, pathogenesis and clinical features of the common types of glomerulonephritis leading to nephrotic syndrome.
14	Glomerular pathology in systemic disease. (Pathology)	<ol style="list-style-type: none"> Discuss the glomerular lesions associated with <ul style="list-style-type: none"> - Diabetes mellitus. - Systemic lupus erythematosus. - Henoch-shonlein purpura. - Multiple myeloma. - Gout. - Endocarditis.
15	Parameter of renal active transport. (Physiology)	<ol style="list-style-type: none"> Discuss the renal tubular transport maximum (T_m). Define the filtered load and excretion. Understand the glucose and para-aminohippuric acid (PAH) titration curve.
16	Renal clearance. (Physiology)	<ol style="list-style-type: none"> Understand the mechanisms of renal clearance and its applications. Describe the inulin, creatinine and PAH clearance.
17	Renal concentration and dilution of urine. (Physiology)	<ol style="list-style-type: none"> Understand the mechanisms of dilution and concentration <ul style="list-style-type: none"> - Counter current multipliers. - Counter current exchangers. Discuss the role of urea.
18	Diuretic agents-I. (Pharmacology)	<ol style="list-style-type: none"> List major types of diuretics and relate them to their sites of action. List the major applications, toxicities, and the efficacy of thiazides, loop diuretics and potassium-sparing diuretics. Describe two drugs that reduce potassium loss during diuresis.
19	Diuretic agents-II. (Pharmacology)	<ol style="list-style-type: none"> Describe a therapy that will reduce calcium excretion in patients who have recurrent urinary stones. Discuss the principle of force diuresis. Describe the drugs for reducing urine volume in nephrogenic diabetes insipidus.
20	Gross anatomy and histology of ureter urinary bladder and urethra. (Anatomy)	<ol style="list-style-type: none"> Describe the structure of the urinary bladder and its relations to the peritoneum. Understand the urethra and the difference between males and females. Describe the structure and relations of the male urethra in different regions. Describe the microscopical appearance of the ureter, urinary bladder and urethra. Compare the histological appearance of the distended and contracted bladder.
21	Urinary tract infection (UTI). (Microbiology)	<ol style="list-style-type: none"> Understand the role of <i>E.coli</i> and other gram negative bacteria as well as gram positive organisms in UTI, their laboratory diagnosis and susceptibility to antibiotics.
22	Diseases of blood vessels; renal failure. (Pathology)	<ol style="list-style-type: none"> Define causes, pathogenesis, pathology and presentation of renal diseases of blood vessels. Contrast acute and chronic renal failure with the emphasis on pathogenesis, causes, morphology and clinical course
23	Drugs and the Kidney. (Pharmacology)	<ol style="list-style-type: none"> Understand the usefulness of altering urine pH by drugs. Discuss the mechanisms by which drugs and chemicals damage the kidney. Understand how to select and prescribe drugs for patients with renal impairment.
24	Schistosomiasis. (Microbiology)	<ol style="list-style-type: none"> Describe <i>Schistosoma Hematobium</i>, its pathogenesis, immune response, epidemiology, life cycle and clinical manifestations. Describe the laboratory diagnosis, treatment, prevention and control

		measures.
25	Tubulointerstitial nephritis; urinary tract infection. (Pathology)	<ol style="list-style-type: none"> 1. Define the features and general morphology of tubulointerstitial nephritis. 2. Define the pathogenesis, morphology and clinical features of drug induced tubulointerstitial nephritis. 3. Define the morphology and clinical features of acute and chronic pyelonephritis. 4. Define the morphology and clinical features of obstructive uropathy and the common sites of ureteric obstruction. 5. Discuss the pathogenesis, clinical features and types of urinary stones. 6. Discuss the predisposing factors, causes and pathology of cystitis.
26	Renal tumors; pathology of ureter and urinary bladder. (Pathology)	<ol style="list-style-type: none"> 1. Discuss the main features of angiomyolipoma and oncocytoma (benign renal neoplasms) 2. Discuss the risk factors, morphology and clinical features of renal cell carcinoma (RCC). 3. List the main features of urothelial carcinoma of the renal pelvis 4. Discuss the risk factors, morphology and clinical features of nephroblastoma. 5. Describe the pathology of bladder cancer including; epidemiology, types, grading, staging and prognosis.
27	Living and radiological anatomy. (Anatomy)	<ol style="list-style-type: none"> 1. Discuss the normal position of different parts of the urinary system with the help of living examination. 2. Understand the radiological examination, normal plain KUB and normal IVP.
28	Introductory case presentation for the reproductive part of the system. (Multidisciplinary)	<ol style="list-style-type: none"> 1. Understand the general outline of the reproductive system. 2. Be familiar with the modalities of teaching throughout the course. 3. Acknowledge the important relation between normal and abnormal structure and function. 4. Appreciate the importance of basic sciences in clinical application.
29	Pelvic walls, perineum, and pelvic diaphragm. (Anatomy)	<ol style="list-style-type: none"> 1. Describe the structure of bony pelvis, perineum, and pelvic diaphragm. 2. Discuss the nerves of the pelvis. 3. Describe the radiographic images and the surface landmarks of the pelvis.
30	Urogenital diaphragm in both males and females. (Anatomy)	<ol style="list-style-type: none"> 1. Describe the perineum and its boundaries. 2. Describe the anal triangle including anal canal, levatori anni muscles and anal sphincters. 3. Describe the urogenital triangle.
31	Anatomical components of male reproductive system. (Anatomy)	<ol style="list-style-type: none"> 1. Describe the peritoneal foldings on the pelvic viscera in males. 2. Describe male genital organs. 3. Describe the relationship, blood supply, innervation, and lymph drainage of the above listed parts.
32	Developmental Anatomy. "Embryology" of the reproductive system. (Anatomy)	<ol style="list-style-type: none"> 1. Describe the development of gonads, genital ducts and external genitalia. 2. Describe the descent of testes and ovaries.
33	Hormonal regulation of sex determination. (Physiology)	<ol style="list-style-type: none"> 1. Discuss the role of various hormones and factors involved in sex differentiation.
34	Male reproductive physiology. (Physiology)	<ol style="list-style-type: none"> 1. Discuss the endocrine regulation of male reproduction. 2. Understand the functions of the male reproductive organs and glands 3. Discuss the spermatogenesis process. 4. Discuss the male reproductive dysfunction.
35	Histology of the male reproductive system. (Anatomy)	<ol style="list-style-type: none"> 1. Describe the histological features of the male reproductive system.
36	Androgens and their antagonists. (Pharmacology)	<ol style="list-style-type: none"> 1. Classify and understand the nature and the mechanism of action of androgens and androgen antagonists. 2. Discuss the therapeutic uses of androgens and their abuse potential.

37	Disease of the penis, scrotum and testis. (Pathology)	<ol style="list-style-type: none"> 1. Identify the pathologic features of condyloma acuminatum, giant condyloma, Bowen's disease, Bowenoid papulosis, and erythroplasia of Queyrat. 2. Identify the etiology, pathology and complications of cryptorchidism. 3. Classify testicular tumors with emphasis on the tumor markers of seminoma, embryonal carcinoma, teratoma, yolk sac tumor and choriocarcinoma.
38	Diseases of the prostate. (Pathology)	<ol style="list-style-type: none"> 1. Identify the pathologic features of acute prostatitis, chronic prostatitis and chronic non-bacterial prostatitis. 2. Discuss the incidence, hormonal effects and pathology of prostatic nodular hyperplasia. 3. Recognize the incidence, hormonal effects, pathology, clinical, pathways of spread, staging, and tumor markers of prostatic carcinoma.
39	Anatomical components of the female internal reproductive system. (Anatomy)	<ol style="list-style-type: none"> 1. Describe the peritoneal foldings on the pelvic viscera in the female. 2. Describe the structure of the female genital organs.
40	Anatomical components of the female external reproductive system. (Anatomy)	<ol style="list-style-type: none"> 1. Describe the organs of the female urogenital triangle. 2. Describe the relationship, blood supply, innervation, and lymph drainage of all the above organs.
41	Erection. (Physiology)	<ol style="list-style-type: none"> 1. Discuss the mechanism and disorders of the erection process.
42	Histology of the female reproductive system. (Anatomy)	<ol style="list-style-type: none"> 1. Describe the histological features of the ovaries, uterine tube, uterus and vagina.
43	Female reproductive physiology-I. (Physiology)	<ol style="list-style-type: none"> 1. List the hormones of female reproduction and describe their functions. 2. List the functions of the female reproductive system. 3. Describe the pituitary ovary axis and the changes that occur in the ovaries leading up to and following ovulation during an ovarian cycle.
44	Female reproductive physiology-II. (Physiology)	<ol style="list-style-type: none"> 1. Describe the normal sequence of events of puberty in the female. 2. Discuss the structural changes that occur in the endometrium during the menstrual cycle and explain how these changes are hormonally controlled. 3. Describe the physiology of the menopause. 4. Describe the disorders of reproductive function.
45	Disease of the vulva and vagina. (Pathology)	<ol style="list-style-type: none"> 1. Recognize the histopathology and clinical significance of Lichen sclerosis, squamous hyperplasia, vulvar dystrophy, leukoplakia, extramammary Paget's disease, condyloma acuminatum, condyloma lata and vulvar intraepithelial neoplasia types (I,II,III). 2. Describe the pathologic characteristics and sites of metastases for squamous cell carcinomas of vulva and vagina.

46	Gonorrhoea. (Microbiology)	<ol style="list-style-type: none"> 1. Understand the role of <i>Neisseria gonorrhoea</i> as the commonest cause of sexually transmitted diseases. 2. Describe the laboratory diagnosis, pathogenesis, susceptibility to antibiotics and epidemiology of <i>N.gonorrhoea</i>.
47	Trichomoniasis & Ectoparasites. (Microbiology)	<ol style="list-style-type: none"> 1. Describe <i>Trichomonas vaginalis</i> and other ectoparasites transmitted by sexual means, their morphology, structural features and life cycle. 2. Briefly describe clinical presentations and drugs used for treatment.
48	Physiology of pregnancy. (Physiology)	<ol style="list-style-type: none"> 1. Describe, fertilization, transport and implantation of the developing ovum. 2. Describe the function of placenta. 3. Describe the response of the mother's body to pregnancy. 4. Describe and discuss fetal circulation.
49	Female sex steroids and contraceptives agents. (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the nature, mechanisms of actions and the adverse effects of female sex steroids and various female contraceptive agents. 2. Indicate the therapeutic applications of antiestrogenic agents.

50	Diseases of the cervix. (Pathology)	<ol style="list-style-type: none"> 1. Describe the histopathologic changes, age incidence and risk factors for cervical intraepithelial neoplasia and its association with human papilloma virus. 2. Discuss the age incidence, predisposing factors, pathologic characteristics and sites of metastases for squamous cell carcinoma of the cervix.
51	Infections by <i>Chlamydia</i> , <i>Gardnerella</i> , and <i>Ureaplasma</i> . (Microbiology)	<ol style="list-style-type: none"> 1. Describe the differences in structure, morphology and replication of these organisms from other bacteria or viruses. 2. Describe the pathogenesis stressing the role of virulence factors and their implication on the clinical picture. 3. Describe laboratory diagnosis and rationale behind treatment.
52	Parturition and lactation. (Physiology)	<ol style="list-style-type: none"> 1. Discuss the factors currently thought to be involved in the initiation of parturition. 2. Discuss the hormonal requirements for mammary gland development and establishment of lactation. 3. Describe the milk composition.
53	Diseases of the breast-I. (Pathology)	<ol style="list-style-type: none"> 1. Understand the diagnostic approach to palpable and non-palpable breast lesions. 2. Describe the non-neoplastic disorders and benign tumors of the breast with emphasis on mastitis, fat necrosis, fibrocystic changes in the breast, fibroadenoma, phyllodes tumor, and intraduct papilloma. 3. List breast cancer risk factors.
54	Diseases of the breast-II. (Pathology)	<ol style="list-style-type: none"> 1. Describe the major types of breast cancer including, insitu, invasive ductal, lobular, medullary, mucinous and tubular carcinomas. 2. List the important factors in assessing the prognosis of breast cancer. 3. Understand the role of estrogen and progesterone receptors in the management of breast cancer.
55	Drugs acting on the uterus. (Pharmacology)	<ol style="list-style-type: none"> 1. Describe drugs (stimulants and relaxants) of the uterus and their therapeutic uses and adverse effects.
56	Disease of the uterus. (Pathology)	<ol style="list-style-type: none"> 1. Distinguish between endometriosis, adenomyosis and endosalpingiosis by clinical, pathological features and natural history. 2. Distinguish between the different types of endometrial hyperplasia by histological appearance, clinical and natural history. 3. Understand the age incidence, and pathologic findings, of leiomyoma and leiomyosarcoma of uterus. 4. Identify age incidence, predisposing factors, hormonal influence, pathologic characteristics and sites of metastases for endometrial carcinoma.
57	Syphilis. (Microbiology)	<ol style="list-style-type: none"> 1. Describe the morphology of <i>Treponema pallidum</i>, pathogenesis and laboratory diagnosis of the disease. 2. Describe the various stages of the disease and appropriate treatment as well as preventive measures.
58	Inherited diseases-I. (Biochemistry)	<ol style="list-style-type: none"> 1. Understand the genetic bases for sex determination. 2. Understand the autosomal dominant inheritance with examples on related diseases. 2. Understand the autosomal recessive inheritance with examples on related diseases.

59	Inherited diseases-II. (Biochemistry)	<ol style="list-style-type: none"> 1. Understand the sex-linked inheritance with examples on related diseases. 2. Understand the mitochondrial inheritance with examples on related diseases. 3. Understand the multifactorial inheritance with examples on related diseases.
60	Diseases of the ovaries and fallopian tubes. (Pathology)	<ol style="list-style-type: none"> 1. Classify ovarian tumors with the emphasis on serous, mucinous, endometrioid carcinoma, epithelial tumors and germ cell tumors of the ovary. 2. Describe the age incidence, predisposing factors, pathological characteristics, sites of metastases for epithelial tumors and germ cell tumors of the ovary.
61	HIV and AIDS. (Microbiology)	<ol style="list-style-type: none"> 1. Describe the nature of the virus, life cycle and its role in the understanding of pathogenesis and immunopathology of AIDS with emphasis on its epidemiology. 2. Describe the laboratory measures for screening, confirmation and follow up of treatment. 3. Highlight the treatment regimens and preventive measures.
62	Herpes, Cytomegalo Virus, Human Papilloma Virus and Moluscum contagiosum. (Microbiology)	<ol style="list-style-type: none"> 1. Describe the structure, morphology, replication cycle and serotypes of each virus as well as epidemiology of the diseases they cause. 2. Describe the pathogenesis and role of these viruses in cervical cancer. 3. Describe the cell culture and serology for identification and highlight role of antiviral drugs in treatment.
63	Gestational disease. (Pathology)	<ol style="list-style-type: none"> 1. Describe age incidence, predisposing factors, natural history and pathological characteristics for complete and partial hydatidiform mole, invasive mole and gestational choriocarcinoma.
64	Candidiasis. (Microbiology)	<ol style="list-style-type: none"> 1. Describe the morphology of <i>Candida albicans</i>, its pathogenesis and the association between the immune system and fungal infections. 2. Briefly describe clinical presentation and the nature of the vaginal discharge. 3. Describe laboratory methods of diagnosis as well as drugs used for treatment.
65	Infections of urinary and reproductive system. (Public Health)	<ol style="list-style-type: none"> 1. Identify the risk factors for urinary and reproductive system infections and disease.
66	Community awareness (Public Health)	<ol style="list-style-type: none"> 1. Describe methods to promote community awareness regarding menses, menstrual changes, and fertility.

b. Practical Laboratory Sessions

Lab #	Lab. Title	Objectives
1	Gross anatomy of the urinary system. (Anatomy)	<ol style="list-style-type: none"> 1. Define different parts of the urinary system in the abdomen and pelvis. 2. Localize the kidney within posterior abdominal compartment, and its relation to the surrounding organs. 3. Trace the ureter from the pelvis of the kidney until the urinary bladder. 4. Define the urinary bladder and apply knowledge about its relations in the pelvic cavity both in males and females. 5. Compare the urethra in both sexes. 6. Identify all parts of the urinary system in normal conditions on plain X-rays and IVP. 7. Identify major congenital anomalies affecting this system by imaging techniques.
2	Histology. (Anatomy)	<ol style="list-style-type: none"> 1. Identify the microscopical appearance of the: <ul style="list-style-type: none"> - Nephron and its parts. - Renal medulla. - Ureter. - Urinary bladder. - Urethra.
3	Glomerular pathology. (Pathology)	<ol style="list-style-type: none"> 1. Identify the main light microscopical features of the different types of glomerulonephritis plus selected examples of electron microscopic (EM) and immunofluorescence (IF). (for this class use Webpath images & glass slides from your slide box).
4	Non-neoplastic diseases of the kidney. Neoplasms of kidney and urothelial tumors. (Pathology)	<ol style="list-style-type: none"> 1. Identify the congenital and cystic diseases of the kidney grossly. 2. Examine kidneys with pyelonephritis grossly and microscopically. 3. Examine kidneys with hydronephrosis, lithiasis and tuberculosis grossly; (for this class use Webpath, glass slides and gross specimens in the museum) 4. Examine the gross and histological slides of renal cell carcinoma and nephroblastoma (Wilms tumor). 5. Examine urinary bladder cancer grossly and histologically; (for this class use the Webpath, glass slides and gross Specimens).
5	Urinalysis and urine culture. (Microbiology)	<ol style="list-style-type: none"> 1. Describe methods of urine collection. 2. Examine the following characteristics of urine: <ul style="list-style-type: none"> -Physical. -Chemical. -Microscopic. 3. Demonstrate the lab diagnosis of urinary tract infection. 4. Demonstrate the significance of antibiotic sensitivity test in urinary tract infection. 5. Identify the morphological features of <i>Schistosoma Hematobium</i>.
6	Pelvis I. (Anatomy)	<p>Describe the following:</p> <ol style="list-style-type: none"> 1. Bony pelvis. 2. Pelvis muscles. 3. Pelvic peritoneum. 4. Urogenital triangle in males. 5. Male internal genitalia: <ul style="list-style-type: none"> - Vas deferens. - Seminal vesicles. - Ejaculatory ducts. - Prostate. - Prostatic urethra.
7	Pelvis II. (Anatomy)	<p>Describe the following:</p> <ol style="list-style-type: none"> 1. Female internal genitalia: <ul style="list-style-type: none"> - Ovary - Uterine (Fallopian) tube. - Uterus. - Vagina. 2. The perineum. 3. Anal triangle.

		4. Urogenital triangle in females. 5. Vessels and nerves of pelvis and perineum.
8	Male reproductive system. (Pathology)	1. Identify the gross and histological features of: - Benign prostatic hyperplasia. - Carcinoma of the prostate. - Carcinoma of the penis. - Testicular tumors. 2. Identify the gross appearance of hydrocele and torsion of testis. 3. Identify the histological features of testicular atrophy associated with infertility cases.
9	Female genital tract-I. (Pathology)	1. Identify and recognize the pathologic changes in: - Human papilloma virus infection. - Squamous cell carcinoma of the vulva, vagina and cervix. - Dysplasia and squamous intraepithelial neoplasia of the cervix. - Endometrial adenocarcinoma. - Adenomyosis and endometriosis. - Benign and smooth muscle tumors of the uterus.
10	Female genital tract-II. (Pathology)	1. Identify and recognize the pathologic changes in: - Ectopic tubal pregnancy. - The following ovarian tumors: serous, mucinous, granulosa cell, teratomas and Krukenberg tumor - Gestational disease: molar pregnancies and choriocarcinoma.
11	Urethral Discharge. (Microbiology)	1. Describe specimen collection methods used in sexually transmitted disease, and storage of specimens. 2. Recognize in microscopic slides bacteria, fungi, and parasites causing urethral discharge. 3. 3. Culture a urethral discharge simulated specimen that has Neisseria sp. Identify it by biochemical tests.

Summary of the teaching activities in the module

Department	No of Lectures	No of Labs
Anatomy	14	4
Physiology	13	0
Biochemistry	3	0
Pathology	17	5
Microbiology	9	2
Pharmacology	6	0
Public Health	2	0
Multidisciplinary	2	0
Total	66	11

Urino-Genital System (UGS,)
(11:15-2:15)/Science Hall-
week 1

Time	Sun.	Mon.	Tue.	Wed.	Thu.
8:15 – 11:15					Lab(1) Anatomy (B) Lab(2) Histology (A)
11:15 – 12:15	Introduction to Urino-Genital System (UGS), urinary part (Multidisciplinary) (Science Hall-2) 12:15-1:15	General topographic anatomy of the urinary system. (Anatomy)	Glomerular filtration (GF). (Physiology)	Gross anatomy and histology of ureter, urinary bladder and urethra. (Anatomy)	Regulation of the GF and renal-blood flow (RBF). (Physiology)
12:15 – 1:15		Gross anatomy of the urinary system, blood vessels, lymphatic drainage and innervation. (Anatomy)	Reabsorption and secretion. (Physiology)	Special aspects of renal metabolism. Role of kidney in acid base balance. (Biochemistry)	Glomerulonephritis. (Pathology)
1:15 – 2:15		Histology of the kidney. (Anatomy)		Congenital and cystic diseases of the kidney. (Pathology)	Parameter of renal active transport. (Physiology)
2:15 – 5:15				Lab(1) Anatomy (A) Lab(2) Histology (B)	

Urino-Genital System (UGS,)
(11:15-2:15)/Science Hall-
week 2

Time	Sun.	Mon.	Tue.	Wed.	Thu.
8:15 – 11:15	Lab(1) Anatomy (C) Lab(2) Histology (D) Lab(3) Pathology (E)	Lab(1) Anatomy (D) Lab(2) Histology (E) Lab(3) Pathology (B)	Lab(1) Anatomy (E) Lab(2) Histology (C) Lab(3) Pathology (D)	Lab(3) Pathology (C)	Lab(5) Microbiology(B) Lab(4) Pathology (A)
11:15 – 12:15	Renal concentration and dilution of urine. (Physiology)	Nephritic Syndrome. (Pathology)	Diuretic agents-II. (Pharmacology)	Embryology of the urinary system. (Anatomy)	Diseases of blood vessels; Renal failure (Pathology)
12:15 – 1:15	Renal clearance. (Physiology)	Nephrotic Syndrome. (Pathology)	Glomerular pathology in systemic diseases. (Pathology)	Renal tumors; Pathology of ureter and urinary bladder. (Pathology)	Drugs and the Kidney. (Pharmacology)
1:15 – 2:15		Diuretic agents –I. (Pharmacology)		Urinary tract infection. (Microbiology)	Schistosomiasis (Microbiology)
2:15 - 5:15			Lab(3) Pathology (A)	Lab(5) Microbiology(E) Lab(4) Pathology (B)	Lab(5) Microbiology(C)

Urino and reproductive system
(11:15-2:15)/Science Hall-
week 3

Time	Sun	Mon	Tue	Wed	Thu
8:15 - 11:15	Lab(4) Pathology (E) Lab(5) Microbiology(D)	Lab(4) Pathology (C) Lab(5) Microbiology(A)	Lab(4) Pathology (D)		
11:15 – 12:15	Tubulointerstitial nephritis; Urinary tract infection (Pathology)	Discussion groups Renal failure (C1, C2, C3, C4) 11:15-12:45	Discussion groups Renal failure (D1, D2, D3, D4) 11:15-12:45	Introduction to Urino- Genital System (UGS), genital part (Multidisciplinary) (Science Hall-2) 12:15-1:15	Urogenital diaphragm in both males and females. (Anatomy)
12:15 – 1:15	Living and Radiological anatomy (Anatomy)	Discussion groups Renal failure (A1, A2, A3, A4) 1:15-2:45			Anatomical components of male reproductive system. (Anatomy)
1:15 – 2:15				Pelvic walls, perineum, and pelvic diaphragm. (Anatomy)	Hormonal regulation of sex determination. (Physiology)
2:15 – 5:15	Discussion groups Renal failure (B1, B2, B3, B4) 2:15-3:45		Discussion groups Renal failure (E1, E2, E3, E4) 2:15-3:45		

Urino-Genital System (UGS,)
(11:15-2:15)/Science Hall-
week 4

Time	Sun	Mon	Tue	Wed	Thu
8:15 - 11:15	Lab(6) Anatomy (A)		Lab(6) Anatomy (B)	Lab(6) Anatomy (C)	Lab(7) Anatomy (A) Lab(8) Pathology (E)
11:15 - 12:15	Male reproductive physiology. (Physiology)		Androgens and their antagonists. (Pharmacology)	Diseases of the prostate. (Pathology)	Histology of the female reproductive system. (Anatomy)
12:15 – 1:15	Histology of the male reproductive system. (Anatomy)		Diseases of the penis, scrotum and testis. (Pathology)	Anatomical components of the female internal reproductive system. (Anatomy)	Erection. (Physiology)
1:15 – 2:15				Anatomical components of the female external reproductive system. (Anatomy)	Developmental Anatomy. “Embryology” of the reproductive system. (Anatomy)
2:15 – 5:15			Lab(6) Anatomy (D)	Lab(6) Anatomy (E) Lab(8) Pathology (A)	

Urino-Genital System (UGS,)
(11:15-2:15)/Science Hall-
week 5

Time	Sun.	Mon.	Tue.	Wed.	Thu.
8:15 - 11:15	Lab(7) Anatomy (E) Lab(8) Pathology (D)	Lab(7) Anatomy (D) Lab(8) Pathology (C)	Lab(7) Anatomy (C) Lab(8) Pathology (B)	Lab(7) Anatomy (B)	Lab(9) Pathology (A)
11:15 – 12:15	Female reproductive physiology-I. (Physiology)	Diseases of the vulva and vagina. (Pathology)	Physiology of pregnancy. (Physiology)	Diseases of the cervix (Pathology)	Drugs acting on the uterus. (Pharmacology)
12:15 – 1:15	Female reproductive physiology-II. (Physiology)	Gonorrhoea. (Microbiology)	Female sex steroids and contraceptives agents. (Pharmacology)	Infections by <i>Chlamydia, Gardnerella, & Ureaplasma.</i> (Microbiology).	Parturition and lactation. (Physiology)
1:15 – 2:15		Trichomoniasis & Ectoparasites. (Microbiology)		Diseases of the uterus. (Pathology)	Diseases of the breast-I. (Pathology)
2:15 – 5:15					

Urino-Genital System (UGS,)
(11:15-2:15)/Science Hall-
week 6

Time	Sun.	Mon.	Tue.	Wed.	Thu.
8:15 – 11:15	Lab(9) Pathology (B)	Lab(9) Pathology (D)	Lab(11) Microbiology (A) Lab(9) Pathology (E)	Lab(11) Microbiology (C) Lab(10) Pathology (A)	Lab(11) Microbiology (D) Lab(10) Pathology (C)
11:15 - 12:15	Diseases of the breast-II. (Pathology)	Herpes,Cytomegalo Virus,Human Papilloma Virus and Moluscum contagiosum. (Microbiology)	HIV and AIDS. (Microbiology)	Inherited diseases-I. (Biochemistry)	Genital-urinary tract infections. (Public Health)
12:15 – 1:15	Syphilis (Microbiology)	Candidiasis. (Microbiology)	Gestational diseases. (Pathology)	Inherited diseases-II. (Biochemistry)	Community awareness (Public Health)
1:15 – 2:15		Diseases of the ovaries and fallopian tubes. (Pathology)			Discussion groups Infertility (B1, B2, B3, B4) 1:15-2:45
2:15 - 5:15	Lab(9) Pathology (C)		Lab(11) Microbiology (B)		

Urino and reproductive system)
(11:15-2:15)/Science Hall-
week 7

Time	Sun	Mon	TUE	Wed	Thu
8:15 – 11:15	Lab(11) Microbiology (E) Lab(10) Pathology (D)	Discussion groups Infertility (C1, C2, C3, C4) 8:30-10:00		Revision Anatomy, Physiology, Biochemistry, Pathology, Pharmacology and Histology 11:15-2:15 (OFFICE HOURS)	Revision Anatomy, Physiology, Biochemistry, Pathology, Pharmacology and Histology 11:15-2:15 (OFFICE HOURS)
11:15 – 12:15	Discussion groups Infertility (D1, D2, D3, D4) 11:15-12:45	Discussion groups Infertility (A1, A2, A3, A4) 10:15-11:45			
12:15 – 1:15		Discussion groups Infertility (E1, E2, E3, E4) 12:15-1:45			
1:15 – 2:15					
2:15 – 5:15	Lab(10) Pathology (B)	Lab(10) Pathology (E)			

Case Presentation-1(PBL)

1-Acute renal failure

A previously well 32-year-old man is brought to the emergency department having been involved in a motor vehicle accident. The circumstances of the accident are initially unclear. However, the ambulance officers who attended the accident noted that he was trapped in the vehicle for three hours before being freed. At this time he was hypotensive with a systolic blood pressure of 80 mmHg, and had significant injuries to his lower limbs with probable fracture of both femora. He was initially treated with colloid and subsequently crystalloid fluid resuscitation, and his systolic blood pressure stabilized at 100 mmHg. At the time of admission to the emergency department, abdominal, thoracic, and cerebral injuries were excluded and his injuries were assessed as being confined to his lower limbs. He was tachycardic and his blood pressure was 100/60 mmHg, and his jugular venous pressure was not visible even though he was lying flat. In preparation for surgical stabilization of his lower limbs, he had a urinary catheter inserted and 50 ml of dark urine, which tested strongly positive for blood on urinalysis, was drained, after which minimal urine output was documented.

Initial laboratory investigations revealed the following results:

Hemoglobin 79 g/L
Sodium 140 mmol/L
Potassium 7.8 mmol/L
Chloride 98 mmol/L
Bicarbonate 11 mmol/L
Urea 13 mmol/L
Creatinine 0.19 mmol/L

Goals and Objectives:

- 1- Briefly summarize the case to the students.
- 2- List the signs and symptoms that this patient had and explain them.
- 3- Define the Acute Renal Failure.
- 4- Discuss the causes of acute renal failure.
- 5- What are the factors involved in the development of this man's acute renal failure?
- 6- Explain the initial laboratory findings and what additional biochemical abnormalities are likely to be present?
- 7- Discuss how to evaluate renal function with the emphasis on blood urea nitrogen and serum creatinine.
- 8- Describe in general terms the expected course and prognosis of this renal failure.
- 9- Discuss the complications of acute renal failure.
- 10- Describe the basic principles in the treatment of acute renal failure.

Case Presentation-2

Infertility

A 25 year-old married nurse had an emergency caesarean section performed for fetal distress associated with a placental abruption at 38 weeks gestation. The baby was delivered safely, but the postnatal recovery was complicated by puerperal pyrexia and a foul-smelling vaginal discharge. She was next seen 3 years later in the gynaecology outpatient clinic complaining of infertility. She had started trying for a second child 6 months after her caesarean section, having relied on the sheath for contraception during this time. She was still married to the same husband, had remained in good health and menstruated regularly for 4 days out of every 28 days.

Nothing untoward was found on examination and a postcoital test on the 12th day of her cycle showed plentiful actively motile spermatozoa in a copious clear mucus. Serum prolactin was 258mu/L, FSH 4.6 U/L, LH 6.0 U/L and thyroid function was normal. Her Temperature chart was clearly biphasic and day 21 serum progesterone suggestive of ovulation (> 40 nmol/L).

Diagnostic laparoscopy was therefore performed and revealed a normal uterus, right tube and ovary. The left tube, however, was bound down by adhesions to the back of the broad ligament and there was evidence of chronic sepsis and adhesions in the pouch of Douglas. The left ovary could not be seen. Methylene blue dye was injected through the cervix and passed easily through the right tube but not the left.

Objectives:

- 1) Briefly summarize the case to the students.
- 2) List the signs and symptoms that this patient had and explain them.
- 3) Define and classify infertility.
- 4) List the causes of infertility (male and female).

- 5) What investigations should be performed before embarking on the treatment of infertility.
- 6) How significant is the finding of unilateral tubal blockage in this particular case?
- 7) If the tubal blockage is responsible for this lady's secondary infertility, what can be done in the way of treatment?
- 8) Describe the basic principle in the treatment of infertility.

3-Teachingandlearningmethods:

METHODS USED:

- Lectures
- Discussions
- Practical classes
- Multidisciplinary (Paediatrics & Medicine) lectures

4- StudentsAssessmentmethods:

4-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

4-B) Assessment Tools:

Exam	Day	Date
Practical	According to the group	
Final- Theory	To be decided by Registry office.	

4-C) WeightingSystem:

Examination	Marksallocated
Finalexam:	
w- Written	300
x- Practical	100
Total	400

4-D) Examinationdescription:

Examination	Description
Finalexam:	
w- Written	<input type="checkbox"/> select(MCQs),Shortessay,cases,complete, crossmatching
x- Practical	

5. Recommended Text Books and Atlases:

• Anatomy:

- Principles of Human Anatomy. By G.J. Tortora, latest edition.
- Clinical Anatomy for Medical Students: By R.S. Snell, latest edition.
- Basic Histology, By L. Carlos Junqueira, latest edition.
- Before we are born. By K.L. Morre and T.V.N. Persaud, latest edition.
- Grant Atlas of Anatomy, latest edition.

• Physiology:

- Textbook of Medical Physiology. By Guyton and Hall, latest edition.

• Biochemistry:

- Harper's Biochemistry. By Robert K. Murray and Co., latest edition.
- Supplementary Departmental Handouts.

• Pharmacology:

- Lippincott's Illustrated Reviews: Pharmacology, latest edition.
- Supplementary Departmental Handouts.

- **Pathology:**
 - Basic Pathology. By Kumar, Cotran and Robbins, latest edition.
 - Supplementary Departmental Handouts.

- **Microbiology:**
 - Medical Microbiology. An Introduction to Infectious Diseases. By Series, latest edition.

- **Public Health (Community Medicine):**
 - Supplementary Departmental Handouts.



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine**

**Course Name: Neuroscience I
Code: MED 323,A**

A)Basic Information:

1. **Course title:**Neuroscience I
2. **Specialty:**M.B.B.S. program
3. **Department offeringthecourse:**Multidisciplinary
4. **Academic year:**third year second semester
5. **Dateof specification approval:**
6. **InternalEvaluator:**
7. **Allocated marks:** 200marks.
8. **Course duration:** 4weeksof teaching.
9. **Credithours:** 4
10. **Teaching Approaches:**Integrated System Block with PBL

B)ProfessionalInformation:

1- OverallAimof the Course:

Upon successful completion of this course, students should be able to:

- 1) Outline the general organization of the nervous system.
- 2) Describe the gross features of the human central nervous system (brain and spinal cord).
- 3) Discuss chemical synaptic transmission in terms of mechanisms, functions, and properties, and drugs modulating synaptic transmission.
- 4) Describe brain coverings, cerebrospinal fluid (CSF), and blood supply of the central nervous system.
- 5) Define the structural basis, physiological, and pharmacological properties of the pathways that transmit sensory and motor information in the central nervous system.
- 6) Describe the anatomical and physiological basis for higher-order cortical functions in the central nervous system.
- 7) Describe pathogens that infect the central nervous system and the specific diseases related to the infection process.
- 8) Describe the pathological changes in central nervous system tissue that underlies various neurological diseases.
- 9) Describe the principles that guide our understanding of human behavior and the biochemical basis of various behavioral disorders.
- 10) Correlate lesion sites at specific levels of the central nervous system with neurological and pathological findings of various neurological disorders.
- 11) Describe the pharmacology of drugs employed in the management of various mental and neurological disorders

2. Course contents:

A. Theory

#	Lecture title	Lecture objectives
1, 2	Introductory Meeting and Introductory Clinical Case (Parkinson's disease) (All)	<ol style="list-style-type: none"> 1. Understand the general outline of the Neuroscience module. 2. Be familiar with the modalities of teaching throughout the course. 3. Acknowledge the important relation between normal and abnormal structure and function. 4. Appreciate the importance of basic neurosciences in clinical application and neurology.
3	Microscopic structure of the NS (Anatomy)	<ol style="list-style-type: none"> 1. Classify the types of neurons. 2. Describe the structure of the different parts of neurons. 3. Describe anterograde and retrograde axonal transport. 4. Describe the structure and types of synapses. 5. Describe the process of myelination of myelinated axons. 6. Describe the types of glia cells and their functions. 7. Describe the elements of the blood-brain barrier and the blood-CSF barrier. 8. Describe the structure of the choroid plexus and the meninges.
4	An overview of synaptic transmission of the CNS (Pharmacology)	<ol style="list-style-type: none"> 1. Review the physiology of synaptic transmission and the electrical Properties of synaptic potentials 2. List the criteria for accepting a chemical as a neurotransmitter. 3. Describe the mechanisms by which drugs cause presynaptic and postsynaptic modulation of synaptic transmission. 4. List the major excitatory neurotransmitters. 5. List the major inhibitory central neurotransmitters. 6. Identify the major receptor subtypes of CNS neurotransmitters and their functional role. 7. Indicate the involvement of neurotransmitters in the pathophysiology of Diseases.
5	Introduction and basic structural organization of the CNS (Anatomy)	<ol style="list-style-type: none"> 1. Describe the organization of the NS. 2. Over view of the main parts of the CNS. 3. Identify the main parts of the brain in CT scan and MRI. 4. Describe the surface anatomy of the brain. 5. Explain the concept of nuclei, fasciculi, lemnisci, tracts, laminae, white and gray matter inputs (afferent) and outputs (efferent)
6	Gross morphology of the brain (Anatomy)	<ol style="list-style-type: none"> 1. Demarcate the major lobes, gyri and sulci of the cerebral hemisphere.. 2. Describe the organization of the cerebral hemisphere into cerebral cortex ,white matter and nuclei 3. Describe the types of fibers in the white matter of the cerebral hemisphere: projection (internal capsule), commissural and association fibers. 4. Identify the basal ganglia nuclei. 5. Identify main parts of the diencephalons and name the main functions of each part 6. Define parts of the brainstem and briefly describe its internal structure. 7. Identify the superficial attachments of the cranial nerves. 8. Briefly describe the brain ventricles and meninges.
7	Cerebral hemisphere (Anatomy)	<ol style="list-style-type: none"> 1. Describe the organization of the cerebral cortex. (Layers and columnar organization). 2. Locate the motor, sensory and other cortical areas. 3. Describe the cortical areas related to the written and spoken language. 4. Identify the structures in coronal, sagittal and horizontal sections of brain. 5. Describe the types of fibers in the internal capsule.

8	Gross morphology of spinal cord (Anatomy)	<ol style="list-style-type: none"> 1. Describe the gross anatomical features of the spinal cord. 2. Describe the level of the different spinal segments comparing to the level of their respective vertebrae. 3. Identify important gross features of spinal cord, nerve roots, and spinal ganglia. 4. Describe the internal features of spinal cord (gray matter and white matter) in the different regions. 5. Summarize the location, origin, course and termination of the important ascending and descending tracts of spinal cord.
9	Brain meninges, ventricles and CSF (Anatomy)	<ol style="list-style-type: none"> 1. Describe the arrangement of the meninges and their relationship to brain and spinal cord. 2. Explain the occurrence of epidural, subdural and subarachnoid spaces. 3. Locate the principal subarachnoid cisterns, and arachnoid granulations. 4. Describe the ventricles of brain and importance of their choroids plexus. 5. Summarize the pathway of cerebrospinal fluid (CSF) circulation 6. Locate the safe sites for the lumbar puncture. 7. Identify brain ventricles in CT scan, MRI and ventriculograms.
10	Characteristic features of CNS pathology (Pathology)	<ol style="list-style-type: none"> 1. To know the selectivity of disease and vulnerability of certain areas to specific disease processes. 2. To know the types and functions of the various elements in the CNS & their response to injury. 3. To know the types of cerebral herniations, their anatomical locations & complications. 4. To know the pathology of cerebral edema. 5. To know the types, causes & effects of hydrocephalus. 6. List the malformations and developmental diseases including neural tube defects with or without hydrocephalus.
11	Blood supply of the CNS (Anatomy)	<ol style="list-style-type: none"> 1. Describe the four arteries supplying the CNS. 2. Follow up each artery to its destination. 3. Describe the circle of Willis and its branches. 4. Discuss the principle of end artery type of circulation. 5. Describe venous drainage of the brain.
12	Physiology of the brain circulation and CSF Formation (Physiology)	<ol style="list-style-type: none"> 1. Describe the cerebral blood flow mechanism and the controlling factors. 2. Explain the significance of cerebral perfusion pressure and the mechanism of its control. 3. Describe the pressure-volume correlation and the mechanisms of its control. 4. Discuss the autoregulation mechanisms of cerebral blood flow in health and disease states. 5. Describe formation, composition and circulation of the CSF.
13	Vascular diseases of the CNS (Pathology)	<ol style="list-style-type: none"> 1. Define stroke, transient ischemic attack, and the areas & cells in the brain, which are most susceptible to ischemia & hypoxia. 2. Describe global/ ischemic encephalopathy, laminar necrosis, Border-Zone (Watershed) infarcts. 3. Understand regional infarction and describe their pathology. 4. Know the types of intracranial hemorrhage & their pathological features. 5. Know the effects of hypertension on the brain.
14	Vascular disease and trauma of the CNS (Pathology)	<ol style="list-style-type: none"> 1. List the types of aneurysms in the brain, their pathology, and outcome of their rupture. 2. Define berry aneurysms in the circle of Willis and describe their clinical and pathological manifestations. 3. Describe the types, morphology, pathology and complications of open and closed injury to the brain. 4. Describe the pathology of diffuse axonal injury. 5. List the complications of trauma to the brain and spinal cord. 6. List the types of perinatal brain injury.

15	Higher functions of the neocortex learning and memory (Physiology)	<ol style="list-style-type: none"> 1. Describe the language function of the neocortex 2. Name and locate the large association areas in the cerebral cortex and describe their functions. 3. Define the terms categorical hemisphere and representational hemisphere, and summarize the differences between the hemispheres and their relationship to handedness 4. Review the function of the limbic and frontal and frontal association areas. 5. Define and explain agnosia, unilateral neglect, dyslexia, and prosopagnosia. 6. List the common types of aphasia. 7. Discuss the neural basis of learning and memory. and list parts of the brain that appear to be involved in memory.
16	Metabolism of neurotransmitters (Biochemistry)	<ol style="list-style-type: none"> 1. Discuss the synthesis and degradation of gamma-amino-butyric acid (GABA) 2. Discuss the synthesis and degradation of dopamine, epinephrine and nor-epinephrine 3. Discuss the formation and catabolism of serotonin 4. Discuss the glutamate metabolism 5. Understand the brain peptides as neurotransmitters
17	The biochemical basis of selective neurological disorders (Biochemistry)	<ol style="list-style-type: none"> 1. Discuss the sphingolipids metabolism and their disorders (shingolipidoses) 2. Understand the biochemical bases of Huntington disease 3. Understand the biochemical bases of Alzheimer disease 4. Understand the role of biochemical mechanisms in brain damage due to stroke
18	Development of CNS (Anatomy)	<ol style="list-style-type: none"> 1. Describe the formation of neural tube and neural crest. 2. Describe the development of brain and spinal cord. 3. Describe the positional changes of spinal cord. 4. Describe the development of the spinal nerves and their spinal ganglia. 5. Describe the development of meninges. 6. Describe the development of brain vesicles from the neural tube. 7. Describe the development of the different parts of brain. 8. Describe the development of brain ventricles and choroid plexuses 9. Describe the development of pituitary gland 10. Describe the development of the cranial nerves and their ganglia. 11. Describe the congenital anomalies of brain and spinal cord.
19	Bacterial meningitis (Microbiology)	- Describe the morphology, cultural characteristics, pathogenesis, laboratory diagnosis, treatment and prevention of meningitis caused by <i>Neisseria meningitidis</i> , group b Streptococci, S. Penmoniae, Hemophilus influenzae, and <i>Listeria monocytogenesis</i>
20	Viral and fungal meningitis (Microbiology)	<ol style="list-style-type: none"> 1. Describe the morphology, physical properties, pathogenesis, laboratory diagnosis, treatment of polio virus, coxaki, enteroviruses, echo, arbovirus and rabies virus 2. Describe Cryptococcus neoformans, its morphology, cultural characteristics, pathogenesis, laboratory diagnosis, treatment its importance
21 & 22	Inflammatory conditions of the CNS (Pathology)	<ol style="list-style-type: none"> 1. Compare & contrast the clinical and pathological findings in bacterial and viral meningitis. 2. Know the pathology of tuberculous meningitis and tuberculoma 3. List the types of syphilitic & fungal diseases in the brain 4. Describe viral encephalitis and the main morphological features in the commoner types. 5. Know about prion diseases in the CNS.
23	Limbic system and olfactory pathways (Physiology)	<ol style="list-style-type: none"> 1. Summarize the components of the limbic system. 2. Describe the location, structure and the main connections of the hippocampal formation, amygdala and septal nuclei. 3. Describe olfactory pathway 4. Describe the neural circuits involved in emotional responses and stereotyped behaviors. These include sexual and maternal behavior, fear, rage, and motivation 5. Discuss the brain regions involved in sexual behavior in both sexes. 6. Describe the parts of the brain involved in producing the balance between rage and placidity.

24	Drugs used in schizophrenia and psychotic disorders (Pharmacology)	<ol style="list-style-type: none"> 1. Outline the anatomy of the serotonergic, noradrenergic (norepinephrine) and dopaminergic pathways, and summarize their known and suspected functions. 2. Describe the major symptoms and signs of schizophrenia 3. Describe the dopamine hypothesis of schizophrenia. 4. List the major receptors blocked by antipsychotic drugs. 5. Describe the classifications of antipsychotic drugs 6. Describe the pharmacodynamics of antipsychotic drugs and correlate these pharmacodynamic to their clinical uses. 7. List the adverse effects and the behavior effects of the major antipsychotic drugs. 8. Describe the pharmacokinetics and pharmacodynamic of lithium.
25	Antidepressants (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the monoamine theory of depression 2. Describe the classification of antidepressants. 3. Describe the probable mechanisms and the major pharmacodynamic properties of tricyclic antidepressants. 4. List the toxic effects that occur during chronic therapy and after an overdose of tricyclic antidepressants. 5. Describe the therapeutic use and toxic effects of MAO inhibitors. 6. Identify the second and third generation antidepressants and their distinctive properties. 7. Identify the prototype selective serotonin reuptake inhibitor and list its major characteristics. 8. Identify the major drug interactions associated with the use of antidepressant drugs.
26	Brainstem (Anatomy)	<ol style="list-style-type: none"> 1. Identify the gross features of the brainstem. 2. Briefly describe the internal structure of the brainstems (ascending and descending pathways, sensory and motor cranial nuclei, substantia nigra, red nucleus, olivary nucleus and reticular formation). 3. Describe the main connections of the sensory cranial nuclei. 4. Describe the main connections of the motor cranial nuclei. 5. Review the blood supply of the brainstem. 6. Describe lesions in the brainstem such as medial medullary syndrome and lateral medullary syndrome. 7. Describe the main connections of the substantia nigra and the red nucleus. 8. Describe the main connections of RF and correlate these connections with its main functions.
27	Arousal mechanisms and consciousness and sleep (Physiology)	<ol style="list-style-type: none"> 1. Describe the functions of the reticular formation and discuss the nonspecific sensory system in the reticular formation. 2. Describe the genesis and electrophysiological basis of EEG. 3. Describe the primary types of rhythms that make up the EEG and the behavioral states that correlate with each. 4. Define and explain synchronization and alpha block. 5. Summarize the behavioral and electroencephalographic characteristics of each of the stages of slow-wave sleep. 6. Summarize the electroencephalographic and other characteristics of rapid eye movement (REM) sleep, and describe the mechanisms responsible for its production. 7. Describe the pattern of normal nighttime sleep in adults and the variations in this pattern from birth to old age.

28	EEG: a clinical perspective and pathophysiology of epilepsy (Physiology)	<ol style="list-style-type: none"> 1. Outline the clinical uses of the EEG. Particularly in the diagnosis of epilepsy. 2. Summarize the neuropsychological basis of epilepsy. 3. List the major types of epilepsy. 4. Summarize the behavioral and electroencephalographic characteristics of major types of epilepsy
29	Sedative-hypnotics (Pharmacology)	<ol style="list-style-type: none"> 1. Identify the major chemical classes of sedative-hypnotics. 2. Describe the sequence of CNS effects of a typical sedative-hypnotic over the entire dose range. 3. Describe the pharmacodynamics of benzodiazepines, including interactions with neuronal membrane receptors. 4. Compare the pharmacokinetics of commonly used benzodiazepines and barbiturates and discuss how differences among them affect clinical use. 5. Describe the clinical uses of sedative-hypnotics. 6. Describe the common adverse effects and drug interaction of sedative-hypnotics 7. Understand tolerance and dependence induced by sedative-hypnotics. 8. Understand the therapeutic indications and adverse effects of benzodiazepines antagonists.
30	Drugs used In epilepsy (Pharmacology)	<ol style="list-style-type: none"> 1. Define epilepsy and understand the classification of seizures 2. Understand the biochemical markers of epilepsy. 3. Understand cellular mechanisms underlying epilepsy 4. Describe the major drugs for partial seizures, generalized tonic-clonic, absence, myoclonic seizures, and status epilepticus. 5. List the mechanism of action, adverse effects and drug-drug interaction of each drug. 6. Understand the importance of Therapeutic drug monitoring in the follow-up of patients taking antiepileptic drugs 7. Describe the pharmacokinetic factors that must be considered in designing a dosage regimen for antiepileptic drugs. 8. List the new antiepileptic drugs and describe their advantages, major indications and adverse effects.
31	General anesthetics (Pharmacology)	<ol style="list-style-type: none"> 1. Understand the physiochemical theories of anesthesia; lipid and protein theory. 2. Describe stages of anaesthesia 3. Describe drugs used as pre-anesthetics and the rationale of their use. 4. Identify the main inhalation anesthetic agents and describe their pharmacodynamic and pharmacokinetics properties. 5. Understand the mechanism and toxicities of inhalation anesthetics 6. Describe the relationship between the blood: gas partition coefficient of an inhalation anesthetic and the induction and recovery of anesthesia. 7. Describe how changes in pulmonary ventilation and blood flow can influence the induction and the recovery of inhalation anesthesia. 8. Describe the pharmacodynamic and pharmacokinetics properties of the commonly used intravenous anesthetics. 9. Describe the toxicity of the intravenous anesthetics.
32	Cerebellum: (Anatomy)	<ol style="list-style-type: none"> 1. Identify the major lobes and regions of cerebellum. 2. Summarize the structure of the cerebellar cortex; identify the deep cerebellar nuclei and their connections. 3. Summarize the afferent and efferent connections of the cerebellum and their arrangement in cerebellar peduncles. 4. Describe the major functions of the cerebellum and how each side of the cerebellum controls the ipsilateral side of the body. 5. Explain the effects of lesions of cerebellum and motor disorder associated with cerebellar lesions.

33	Basal ganglia (Anatomy)	<ol style="list-style-type: none"> 1. Understand the anatomical and functional definition of the basal ganglia. 2. Identify the different components of the basal ganglia. 3. Describe the connections of the different components of the basal ganglia and the indirect pathways from the basal ganglia to the lower motor neurons. 4. Describe signs and symptoms of lesions which affect different components of the basal ganglia.
34	Antiparkinsonism drugs (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the neurochemical imbalance underlying the symptoms of parkinson's disease. 2. Identify the mechanisms by which drugs can alleviate parkinsonism. 3. Describe the therapeutic and toxic effects of the major antiparkinsonism drugs. 4. Identify the compounds that inhibit dopa decarboxylase and comt and describe their use in parkinsonism. 5. Identify the chemical agents and drugs that cause Parkinson symptom.
35	Motor pathways (Anatomy)	<ol style="list-style-type: none"> 1. Define the terms upper and lower motor neurons with examples 2. Describe the corticospinal (pyramidal) tract and the direct motor pathways from the cortex to the trunk and limbs. 3. Briefly describe the indirect motor pathways from the cortex to the trunk and limbs through extrapyramidal tracts such as rubrospinal and reticulospinal tracts.. 4. Describe motor pathways to the face muscles. 5. Compare the signs and symptoms of the upper and lower motor neuron lesions.
36	Control of movements and posture: motor functions of cerebrum and brain stem (Physiology)	<ol style="list-style-type: none"> 1. Describe in general terms how posture and movement are regulated, and outline the function of each of the main components of the regulatory systems. 2. Describe the cortical motor area, the pyramids, and the corticospinal tracts. 3. Discuss the function of the pyramidal system in relation to skilled voluntary movement. 4. Define decerebrate and decorticate rigidity, and comment on the cause of each. 5. Describe the postural reflexes that are integrated in the medulla oblongata, the pons, midbrain, and the cerebral cortex. 6. Discuss the motor functions of the brainstem and out line the major functions descending motor pathways originating in the brain stem. 7. Define decerebrate and decorticate rigidity, and comment on the cause of each. 8. Describe the postural reflexes that are integrated in the medulla oblongata, the pons, midbrain and cerebral cortex.
37	General sensory pathways of the trunk and limbs (Anatomy)	<ol style="list-style-type: none"> 1. Describe gracile and cuneate tracts and pathways for conscious proprioception, touch, pressure and vibration from the limbs and trunk. 2. Describe dorsal and ventral spinocerebellar tracts and pathways for unconscious proprioception from the limbs and trunk. 3. Describe lateral spinothalamic tract and pathways for pain and temperature from the limbs and trunk. 4. Describe ventral spinothalamic tract and pathways for simple touch from the limbs and trunk.
38	General sensory pathways of the face area, Taste pathways and Hearing pathways	<ol style="list-style-type: none"> 1. Describe pathways for general sensations (pain, temperature, touch and proprioception) from the face area. 2. Describe taste pathways. 3. Describe hearing pathways.

39	Somatic and visceral sensation pain and thermal sensations (Physiology)	<ol style="list-style-type: none"> 1. Name the types of nerve fibers that mediate warmth and cold in peripheral nerves, and describe where impulses generated in warmth and cold receptors terminate in the cortex. 2. Name the receptors that mediate pain, and explain the differences between fast and slow pain. 3. Compare superficial, deep, and visceral pain. 4. Define chronic and acute pain. 5. Define and explain phantom limb pain. 6. Define hyperalgesia and give examples of primary and secondary hyperalgesia. 7. Define visceral pain and describe pathways carrying pain from visceral organs. 8. List major stimuli of visceral pain. 9. Compare visceral pain to somatic pain. 10. Explain referred pain and give examples. 11. List and explain ways to inhibit pain sensations and describe the brain analgesic system. 12. Discuss example of referred pain from the heart and appendix and other visceral organs.
40	Opioids and opioid antagonists (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the neural mechanisms of pain sensation and its control. 2. List the receptors affected by opioid analgesics and the endogenous opioid peptides. 3. List of major opioid agonists and rank them in analgesic efficacy. 4. Describe the main pharmacodynamic and pharmacokinetic properties of agonist opioid analgesics and list their clinical uses. 5. List the main adverse effects of acute and chronic use of opioid analgesics. 6. Identify opioid receptor antagonists and mixed agonist-antagonist.
41	CNS stimulants and drugs of abuse (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the clinical uses of the opioid receptor antagonists. 2. Describe methods of treatment of opioids dependency. 3. Describe the pharmacological types of drug dependence. 4. Describe the major pharmacological actions of drugs that are commonly abused. 5. Describe the major signs and symptoms of withdrawal of drugs that are commonly abused. 6. Identify the most likely causes of fatalities from commonly abused agents. 7. Describe methods of treatment of drugs abuse.

B. Laboratory Sessions

Students are requested to:

1. Study and prepare the laboratory materials prior to the laboratory session.
2. Prepare a summary of the laboratory procedure.
3. Understand the class materials relevant to the laboratory session.
4. Instructors and faculty will be in the laboratory room to help you understand and learn the required skills.
5. Bring your atlas and relevant text books or notes to help you in identifying the structures in the anatomy Laboratory.
6. Spend the time in the laboratory class to be sure that you have learned the assigned skills.

Laboratory Title	Objectives
Neuroanatomy I	Gross morphology of brain: identify major components of brain, know major lobes, major gyri and sulci identify major components of brain stem, important landmarks and the main arteries of the brain including the circle of Willis.
Neuroanatomy II	Study and identify the major components of brain in coronal transverse and sagittal sections including thalamus, hypothalamus Brain ventricular system included capsule, basal ganglia etc. Use dissected brains, CT scan & MRI.
Neuroanatomy III	Study major parts of the brainstem, origin of the cranial nerve Also identify (using the main nuclei (including the cranial nuclei) and the main ascending and descending pathways in the brainstem. Also, identify the main nuclei, laminae, and tracts in the spinal cord.
Pathology I	Study Images of CNS including cell reactions,
Pathology II	Study images of hemorrhage

	Interactions of CNS
Neurophysiology	<p>A. Coetaneous sensations Determine tactile sensibility by determining two point discrimination.</p> <p>B. Reflexes: Demonstrate deep tendon reflexes and explain their clinical significance. The following reflexes will be studied: knee jerk, ankle jerk, biceps, and triceps reflex. Demonstrate and elicit the following superficial reflexes and explain their physiological significance. The following reflexes will be studied: corneal reflex, palatal reflex, abdominal reflex, and Babinski's sign.</p> <p>C. Muscle tone.</p> <p>D. Electromyogram (EMG)</p>
Lab title	Objectives
Microbiology	<ol style="list-style-type: none"> 1. Describe the method of specimen collection including the process of lumbar puncture. Transportation of specimen, and storage. 2. Describe the laboratory method used for the specimen processing, including media used, incubation environment, colonial morphology and bacterial identification. 3. Prepare a sample culturing resembling CSF specimen and Identify the organisms involved. Write the laboratory findings in the hospital laboratory format.

C- Summary of teaching activities in the module:

Department	No. of Lectures	No. of Sessions	No. of Discussion seminars
Anatomy	14	3	3
Physiology	7	1	3
Biochemistry	2	0	3
Microbiology	2	1	3
Pharmacology	9	0	3
Pathology	5	2	3
Total	39	7	18

Laboratory groups

The students will be divided into 5 major groups (A, B, C, D and E).

Small group discussion:

One seminar topic will be discussed in the module: Cerebrovascular accident.

Group A: A₁, A₂, A₃ and A₄.

Group B: B₁, B₂, B₃ and B₄.

Group C: C₁, C₂, C₃ and C₄.

Group D: D₁, D₂, D₃ and D₄.

Group E: E₁, E₂, E₃ and E₄.

Exams

The Midterm and Practical exam:

TO BE DETERMINED

The Final exam:

The date of the final exam will be DETERMINED.

Note: All faculty members from the Basic Science Departments involved in teaching the module are kindly reminded that they must be involved in all aspects of exams.

D. Introductory clinical case(PBL):

Parkinson's disease

A 39-year-old woman presented with one week history of diplopia and right-sided numbness. Her medical history was benign, and she had no history of previous neurologic events. Her general neurologic examination was notable for patchy predominately right-sided hemisensory loss. Her neuro-ophthalmic examination was remarkable for nearly complete ophthalmoplegia, with the only surviving eye movement

being right abduction. MRI demonstrated a large ring-enhancing lesion in the left paramedian pons with multiple, predominately periventricular T2 bright signal, compatible with extensive demyelinating disease. Lumbar puncture is performed, revealing elevated IgG index, synthesis rate, and positive oligoclonal bands.

After taking a day off from work, her symptoms begin to resolve and by 3 weeks are completely gone.

Three months later, she developed dysequilibrium and her gait becomes unsteady.

One-and-a-half syndrome (one whole gaze palsy and one half of a gaze palsy) results from a lesion in the paramedian pons. This has also been termed paramedian pontine exotropia. All classes of eye movements include an ipsilateral gaze palsy (resulting from involvement of the ipsilateral abducens nucleus) and an ipsilateral INO, secondary to damage to the MLF. The only residual intact eye movement therefore is abduction contralateral to the lesion. Common etiologies include stroke and demyelination.

Three minicases:

1-Epilepsy

The parents of a 5-year-old girl bring her for evaluation of “inattention and spacing out.” She started kindergarten this autumn, and her teacher has remarked that she is not paying attention, is daydreaming, and sometimes appears not to have heard what the teacher is saying. She had a normal birth and developmental history, and the parents have not witnessed these behaviors. Neither of the parents is particularly concerned, and the mother reveals that when she was this age her parents and teachers used to tell her that she was daydreaming, but that she finally managed to finish high school and went on to college to become a pharmacist. The father reports that he had absence seizures as a child but was successfully treated with ethosuximide and outgrew his seizures when he was in his early teens. Two additional family members with a history of epilepsy are identified on the father’s side.

The general physical and neurologic examinations of the child are normal.

The physician has the girl perform hyperventilation in the office. After 1 minute she stops the hyperventilation, stares, and becomes unresponsive. This lasts for 10 seconds after which she is completely back to her baseline.

2-Meningitis

A 44-year-old man is brought to the emergency department by his family for evaluation of fever, headache, and mental status changes. His symptoms have been progressive over the past 3 days. One week before his problem started, he has been complaining of sore throat and low grade fever for which he received only acetaminophen. On examination, he is febrile at 39.4 degrees C, and he is difficult to rouse. When roused, his speech is normal. He has marked neck stiffness. The rest of his neurological examination is unremarkable. His CT with and without contrast is limited by motion artifact, although no obvious mass lesions are identified. CSF analysis shows increased opening pressure at 35cm H₂O, 4 red blood cells, 1200 white blood cells (87% neutrophils, 13% lymphocytes), protein of 120mg/dl, and glucose of 18mg/dl with serum glucose of 92mg/dl.

3-Ataxia

41 Right-handed-man was referred for evaluation of Ataxia. His problem started 4 years ago as gradual onset, progressive unsteadiness. It was associated with new onset slurring of speech.

His past medical history is significant for hypothyroidism for which he was on thyroid replacement therapy (L-Thyroxine).

Social history: He emigrated from Italy to Canada at age of 1 year. He previously owned a small business, but currently he is unemployed. He is married and has one son aged 5 years. He has no history of alcohol use, nor did he smoke or used illicit drugs.

His neurological exam is as follows: He has marked scanning dysarthria, has slow vertical and horizontal saccades but with no nystagmus. He has slow tongue movements. His muscle bulk, tone and power were all normal. He has generalized hyper-reflexia, and his plantar responses were both flexors (i.e. normal). He has marked dysmetria on finger to nose (FNF), heel to shin, and has slow and irregular movements on rapid alternating movements. He has broad-based stance and has staggering gait. His sensory exam was normal including vibration proprioception sensations.

His lab work up showed normal Vitamin B12, and Vitamin E levels, normal serum copper. All other lab results were also normal. Brain MRI showed pontocerebellar atrophy. His family history is as follows: His great grandfather died of similar condition at age 80 years, his father and one of his uncles also died of similar condition. His affected uncle had an affected daughter who died at age 25 years. He has one unaffected uncle and one unaffected aunt.

Questions:

1. What part of the nervous system is responsible for his ataxia?
2. Discuss the basic functions of the cerebellum
3. What is the mode of inheritance for this patient’s ataxia?
4. Discuss the basic genetic abnormalities of Autosomal dominant ad Autosomal dominant ataxias.
5. What is meant by the phenomenon of “Anticipation” in genetics?

Case for small group discussion: Cerebrovascular accident (Stroke):

A 65 years old male with history of chronic arterial systolic hypertension, non-insulin dependent diabetes, and heavy smoking for the last 40 years, presented with acute onset right-sided weakness. He went to bed at 11 pm and woke up in the morning at 7 am with weakness involving the right side of the face, arm, and to a lesser degree the leg. His family also noted his speech was slurred and he had difficulty producing words. He did not have any change in the level of consciousness and no visual problems. He was taken to the emergency room and reached there at 8 am.

Past medical history is significant for one attack of transient painless loss of vision in the right eye 6 months ago, and an attack of right-sided weakness, which gradually improved one year ago.

Physical exam revealed normal pulses, normal heart sounds, and a carotid bruit on the right. Neurologically, he had dysarthria and dysphasia (aphasia). There was right lower facial weakness, weakness in the right arm and leg, and right homonymous hemianopia. Tone was increased on the right. Reflexes were brisk on the right with positive Babinski sign.

Questions:

- 1- Localize were would the lesion most likely be and why?
- 2- What is the most likely pathology of the lesion?
- 3- Identify the most likely etiology for that pathology.
- 4- Identify the risk factors this patient has.
- 5- How would you expect the physical findings to be had this patient had a lower motor neuron disease instead?
- 6- Discuss the available treatment options for this patient, medical and surgical if relevant.

3-Teachingandlearningmethods:

METHODS USED:

- Lectures
- Discussions
- Practical classes
- Multidisciplinary (Paediatrics & Medicine) lectures

4- StudentsAssessmentmethods:

4-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean’s office.

4-B) Assessment Tools:

Exam	Day	Date
Practical	According to the group	
Final- Theory	To be decided by Registry office.	

4-C) WeightingSystem:

Examination	Marksallocated
Finalexam:	
y- Written	150
z- Practical	50
Total	200

4-D) Examinationdescription:

Examination	Description
Finalexam:	
y- Written	□ select(MCQs),Shortessay,cases,complete, crossmatching
z- Practical	

Recommended Text Books:

1. Anatomy:

- Clinical Neuroanatomy for Medical Students By R.S Snell. Latest Edition.
- Any Atlas of neuroanatomy, Latest Edition.
- Basic Histology. By L. Carlos Junqueira, Latest Edition.
- Before we are born. By K. L. Morre and T. V. N. Persaud, Latest Edition.

2. Physiology:

- Textbook of Medical Physiology. By Guyton and Hall, Latest Edition.
- Concise Text of Neuroscience, by R. E. Kingsley, Latest Edition.

3. Biochemistry:

- Harper's Biochemistry. By Robert K. Murray and Co. Latest Edition.
- Supplementary Departmental Handouts.

4. Pharmacology:

- Lippincott's Illustrated Reviews Pharmacology, Latest edition.
- Basic and Clinical Pharmacology. By Katzung, Latest Edition.
- Supplementary handouts.

5. Pathology:

- Basic Pathology. By Kumar, Cotran and Robbins, Latest Edition.
- Essential of Pathology Rubin, Latest Edition.
- Supplementary handouts.

6. Microbiology:

- Medical Microbiology. An Introduction to Infectious Diseases.
- By Sheries, Latest Edition



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine**

**Course Name: Neuroscience II
Code: MED 323,B**

A)Basic Information:

1. **Course title:**Neuroscience II.
2. **Specialty:**M.B.B.S. program
3. **Department offeringthecourse:**Multidisciplinary
4. **Academic year:**third year second semester
5. **Dateof specification approval:**
6. **InternalEvaluator:**
7. **Allocated marks:** 200marks.
8. **Course duration:** 4 weeksof teaching.
9. **Credithours:** 4
10. **Teaching Approaches:** Integrated System Block with PBL

B)ProfessionalInformation:

1- OverallAimof the Course:

By the end of this course, students are expected to:-

1. Learn the mechanisms of sensing the various environmental stimuli.
2. Analyze the structures conveying information to and from the central nervous system.
3. Understand the biochemical events taking place within this system.
4. Be able to comprehend how drugs modify the functions of this system.
5. Explain the various possibilities where things can go wrong in different parts of the system.
6. Know common infections affecting this system.
7. Be able to explain symptoms, signs, investigations and forms of treatments of nervous system's anomalies.

2. Coursecontents:

A.Theory

1	Introductory case presentation. (All Disciplines)	A case will be presented Then open discussion of the case and relevant knowledge needed to explain and solve the case will be emphasized.
2	Tumor of the Nervous system (pathology)	<ol style="list-style-type: none"> 1. Classify tumors and describe the general features of primary brain tumors in comparison to other tumors in the body. 2. Know the pathology and prognosis of the various types of brain tumors. 3. Describe tumors of the peripheral nerves. 4. Know the common types of metastatic tumors and their pathologic characteristics.
3	The Eye and optic nerve. (Anatomy)	<ol style="list-style-type: none"> 1. Make a list of structures making the eyeball. 2. Define each part. 3. Make sure to use essential keywords in your definitions. 4. Discuss the structure of the coats of the eye. 5. Describe the anterior modifications of the eye coats. 6. Describe the contents of the eyeball. 7. Describe the sensory, sympathetic and parasympathetic nerve supply. 8. Define the optic nerve. 9. Follow the optic nerve from the eyeball to its point of entry to the brain. Note important relations. 10. List the related structures to the eye, eyelids and lacrimal system.
4	The orbit, orbital contents and cranial nerves III, IV and VI (Anatomy)	<ol style="list-style-type: none"> 1. Describe the location of the orbit. 2. Make a list of structures making the orbit starting from orbital margin. 3. Define each component. 4. Describe openings into orbital cavity. 5. Define the orbital fascia. 6. Describe muscles of the orbit, their cone arrangement, origin, insertion, nerve supply and their function. 7. Describe the nerves of the orbit, their courses, important relations and their targets 8. Describe blood supply and lymph drainage of the orbit.
5	Neurophysiology of vision, the retina, eye and central visual pathway. (Physiology)	<ol style="list-style-type: none"> 1. Describe the light refraction by the eye and know the refractive indices of the cornea, lens aqueous humor and vitreous humor. 2. Define accommodation and know its mechanism of action as well as its importance for near vision 3. Define visual acuity and know that the fovea has the highest visual acuity 4. Know the types of photoreceptors in the retina. 5. Understand the mechanism of phototransduction and the ionic basis of receptor potential in rods and cones 6. Describe different types of neuronal cells in the retina and their synaptic connections (neural circuit in retina) 7. Know the functions of bipolar cells, horizontal cells, amacrine cells and their role in processing of visual signal. 8. Describe the functions of the visual cortex in perception of visual signals. 9. Review the major relay stations of the visual pathway. 10. List the major functions of the geniculate nucleus and superior colliculus. 11. Discuss the role of the visual cortex in perception of vision. 12. Outline briefly the major pathways of color and black and white vision. 13. Describe the major types of visual cortex cells and their role in visual perception.
6	Trigeminal nerve. (Anatomy)	<ol style="list-style-type: none"> 1. Review the general anatomical features of the face and scalp. 2. Discuss briefly how the face is developed. 3. Follow up the course of trigeminal nerve from its point of central connections, exit and do its target areas. 4. describe briefly important cranial reflexes involving the face and trigeminal nerve

7	The external and middle ear (Anatomy)	<ol style="list-style-type: none"> 1. Make a list of structures making the external and middle ear. 2. Define each part – use keywords. 3. Highlight the structural features of the external auditory meatus. 4. Describe the shape, position and various boundaries of the middle ear. 5. Discuss the features of the tympanic membrane. 6. Describe the ossicles and their muscles. 7. Describe the auditory tube, its openings and structure. 8. Have an idea about mastoid air cells and their connection to the middle ear. 9. Follow up the facial nerve from the brain down to the stylomastoid foramen.(turn page)) 10. Follow up the central connections of the facial nerve. 11. Note the proximity of the internal carotid artery to the middle ear.
8	The facial nerve VII (Anatomy)	<ol style="list-style-type: none"> 1. Follow up the course of facial nerve from its point of central connections, exit and down to its target areas. 2. Describe in details important relation along its course. 3. Discuss the various modalities of its fibers. 4. Review your knowledge of its target organs.
9	Inner ear & cranial nerve VIII. (Anatomy)	<ol style="list-style-type: none"> 1. Make a list of parts making the internal ear. 2. Define each part .Make sure to use keywords. 3. Note how structures fit each other. 4. Describe the bony labyrinth. 5. Explain how the membranous labyrinth fits the bony one. 6. Describe the hearing receptors. 7. Describe the balancing receptors. 8. Follow the course of the VIII nerve down to its point of entry to the brain. 9. Follow up the central connections of the VIII nerve. – Review the list of structures making the different parts of the ear.
10	Hearing. (Physiology)	<ol style="list-style-type: none"> 1. Review the ossicular system of the ear and discuss its role in the conduction of sound waves from the tympanic membrane to the cochlea sound waves. 2. Outline the properties of traveling waves and describe how, via these waves, particular movement of the footplate of the stapes produce maximal deflection of the basilar membrane at a particular point. 3. Discuss the functions of the organs of Corti and describe how deformation of the basilar membrane is converted to impulses in auditory fibers. 4. Describe the ionic basis of auditory receptors. 5. Explain how pitch (frequency) and loudness of sound are coded in the auditory pathways. 6. Discuss the mechanisms that permits sound localization 7. Describe the function of auditory cortex in hearing perception and sound localization.
11	Equilibrium. (Physiology)	<ol style="list-style-type: none"> 1. Explain how hair cells in the semicircular canals detect rotational acceleration. 2. Explain how hair cells in the utricle and saccule detect linear acceleration 3. Describe the role of the vestibular system in stabilizing eye movements during acceleration. 4. Review the major connections of the vestibular system with the brainstem and cerebellum. 5. List the major sensory input that provides the information, which is synthesized in the brain into the sense of position in space. 6. Describe the caloric test for evaluation of vestibular functions.
12	Cranial nerves IX , X . (Anatomy)	<ol style="list-style-type: none"> 1. Follow up its course from its central connections, exit from the brain and down to its target organs. 2. Make a list of types of nerve modalities conveyed by this nerve. 3. Review structure of the pharynx tongue and mouth as the target organs. 4. Follow up its course from its central connections; exit from the brain and down to its target organs. 5. Make a list of types of nerve modalities it conveys and Review your knowledge of its target organs. 6. Make note of plexuses it creates in the thorax and abdomen.

13	Sensory receptors and neuronal circuits (Physiology)	<ol style="list-style-type: none"> 1. Define sensory receptors and adequate stimulus. 2. List different types of receptors and classify them according to modality to which they best respond. 3. Describe the transduction properties of receptors. 4. Define receptor potential (generator potential) and know the ionic basis underlying receptor potential and list the properties of receptor potential. 5. Diagram the electrical response of sensory receptors to graded increase in stimulus strength and describe the relation between receptor potential and the frequency of action potential generated in the sensory nerve that innervate or contain the receptor. 6. Define receptor adaptation and the mechanism of adaptation in receptors and understand the difference between fast and slowly adapting receptors and know the general functions of each type. 7. Understand the encoding of modality, intensity, and location of stimulus. 8. Define labeled line principle, law of projection and law of specific energies. 9. Define sensory unit and receptive field and describe the effects of there size on acuity of sensations. 10. List the major types of neuronal circuits involved in the processing of information.
14	Chemical senses, taste & smell. (Physiology)	<ol style="list-style-type: none"> 1. Describe the olfactory receptors and the mechanism of their excitation. 2. Review the anatomy of olfactory pathway. 3. Describe the primary taste of modalities 4. Discuss the characteristics of taste buds and distribution in relation to the primary taste modalities 5. List major substances that produce sweet, sour , bitter and salty taste and comment on their interaction. 6. Describe taste pathway. 7. Describe the mechanism of excitation of taste receptors and impulse generation in the primary afferents carrying taste sensation.
15	Cranial nerves XI, XII.. (Anatomy)	<ol style="list-style-type: none"> 1. Follow up its course from its central connections; exit from the brain and down to its target organs. <ul style="list-style-type: none"> - Make a list of types of nerve modalities it conveys. - Review your knowledge of its target organs. 2. Follow up its course from its central connections; exit from the brain and down to its target organs. <ul style="list-style-type: none"> - Make a list of types of nerve modalities it conveys - Review your knowledge of its target organs.
16	Development of head & neck. (Anatomy)	<ol style="list-style-type: none"> 1. Define the following: <ul style="list-style-type: none"> Pharyngeal arches. Neural crest cells. Pharyngeal grooves. Pharyngeal pouches. Pharyngeal membranes. 2. Discuss the changes that will take place on the above structures leading to formation of various organs in the head and neck. 3. Make a list of these processes involved in the formation of each organ. 4. Define each process.
17	Histology of peripheral nervous system. (Anatomy)	<ol style="list-style-type: none"> 1. Review the basic histology of neurons, glial cells and synaptic communications. 2. Classify nerves. 3. Describe the structure of peripheral nerves. 4. Discuss myelination. 5. Describe the structure of ganglia (sensory and autonomic).
18	Physiology of peripheral nerves. (Physiology)	<ol style="list-style-type: none"> 1. List various types of nerve fibers in peripheral nerves and know their function. 2. Describe and explain the compound action potential and understand its clinical significance 3. Define latent period and know how to calculate the conduction velocity of peripheral nerves.

19	Local anesthetics. (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the classification of the local anesthetic 2. Indicate the pharmacological characteristics of their chemical structures 3. Describe the mechanism of blockade of the impulse by local anesthetics. 4. Discuss the relation between pH, pK_a, and the speed of onset of local anesthesia. 5. List the factors that determine the susceptibility of nerve fibers to blockade by local anesthetics. 6. List the major toxic effects of the local anesthetics. 7. Explain use-of dependent blockade by local anesthetics.
20	Spinal nerves, cervical plexus & nerves of the neck. (Anatomy)	<ol style="list-style-type: none"> 1. Describe how spinal nerves are formed. 2. Make a list of contributing roots to cervical plexus. 3. Discuss the general arrangement. 4. Describe the location of this plexus. 5. Make a list of the out coming nerves. 6. Follow the branches to their target organs. 7. Point out the point where the major cutaneous nerves emerge. 8. Make a list of the cutaneous nerve. 9. Follow the cutaneous branches to their destinations.
21	Demyelinating diseases. (Pathology)	<ol style="list-style-type: none"> 1. Know the various causes and types of peripheral neuropathies 2. Know about various axonal degeneration and injuries 3. Know the general features of demyelinating diseases, with special emphasis on Multiple Sclerosis, its clinical & morphological characteristics.
22	Degenerative diseases. (Pathology)	<ol style="list-style-type: none"> 1. Know the general features of degenerative diseases & dementias, with special emphasis on Alzheimer's disease, its clinical & morphological findings. 2. Know briefly about Parkinson's Disease, Huntington's disease and amyotrophic lateral sclerosis
23	Brachial plexus (Anatomy)	<ol style="list-style-type: none"> 1. Make a list of contributing spinal nerves. 2. Discuss the general arrangement of this plexus. 3. Locate the plexus in the axilla and note important relations to blood vessels.. 4. Make a list of local branches with short notes on its target organs.
24	Nerves of the upper limb. (Anatomy)	<ol style="list-style-type: none"> 1. Make a list of the terminal main branches of brachial plexus.. 2. Follow up each branch down to its target organs (myotomes and Dermatomes).
25	Lumbosacral plexus & nerves of the lower limb. (Anatomy)	<ol style="list-style-type: none"> 1. Make a list of contributing spinal nerves to the lumbar plexus. 2. Discuss the arrangement of the plexus. 3. Describe the location of this plexus and its relation to the psoas muscle. 4. List the terminal branches and follow up each branch to its final destination. 5. Make a list of contributing spinal nerves to the sacral plexus. 6. Discuss the arrangement of this plexus. 7. Describe the location of this plexus. 8. List its terminal branches and follow up each branch to its target organs. 9. Make a list of nerves of the lower limb including the Gluteal region. 10. Follow up each nerve down to its target joints(cont) myotomes and dermatomes.
26	Spinal cord reflexes. (Physiology)	<ol style="list-style-type: none"> 1. Describe the components that make up the reflex arc, the neural substrate for reflex responses. 2. The general properties of reflexes will be also analyzed. 3. Distinguish between and compare monosynaptic and polysynaptic reflexes. using stretch and withdrawal reflexes as examples. 4. Give examples of stretch reflexes, including those that are frequently tested clinically. 5. Describe the muscle spindles and analyze their function, with particular attention to how they operate as part of a feedback system to maintain muscle length. 6. Define reciprocal innervations, inverse stretch reflex, clonus, and lengthening reaction. 7. Describe superficial reflexes and autonomic reflexes. <p>Define spinal shock, and explain the initial and long-term changes in reflexes that follow transection of the spinal cord.</p>

27	Prions (Microbiology)	Historical back ground, basic structure, classification of diseases involved, epidemiology, pathogenesis and pathology, laboratory diagnosis, treatment and prevention.
28	Sympathetic nervous system. (Anatomy)	<ol style="list-style-type: none"> 1. Review the subdivisions of the nervous system. 2. Review the general arrangement and compare the sympathetic and parasympathetic parts. 3. Describe the following plans Para vertebral ganglia. Prevertebral ganglia. Parasympathetic ganglia. Splanchnic nerves. Autonomic plexuses. 4. Map out the various plexuses in head and neck, thorax, abdomen and pelvis. 5. Make a list of the components of the system. 6. Review the basic structure of sympathetic trunk. 7. Describe the source of sympathetic system in the neck and make a list of target organs. 8. Describe the Para vertebral sympathetic ganglia in the abdomen, their locations and target organs. 9. Discuss the relation of this system to the adrenal medulla. 10 Discuss the sympathetic innervation of blood vessels.
29	Parasympathetic nervous system. (Anatomy)	<ol style="list-style-type: none"> 1. Make a list of the components of the system. 2. Make a list of cranial nerves having parasympathetic activity. 3. Describe the parasympathetic ganglia in the head and neck, their locations and target organs. 4. Describe the sacral parasympathetic out flow. 5. Make a list of its target organs.
30	Functions of the Autonomic nervous system and central regulation of viscera. (Physiology)	<ol style="list-style-type: none"> 1. Review the functions of the ANS and the response of effector organs on the neurotransmitters releases by the two divisions. 2. Understand the concept that ANS is a reflex based control system and emphasize the general feature of autonomic neuronal reflexes. 3. Describe autonomic reflexes integrated at the level of spinal cord and brain stem 4. Describe central regulation of autonomic output and the role of nucleus of the solitary tract, limbic system and hypothalamus in the control of autonomic functions. 5. List the major functions of the hypothalamus including body rhythm, temperature regulation, and appetite control and water intake.
31	Directly acting cholinergic agonists (Pharmacology)	<ol style="list-style-type: none"> 1. Review the steps involved in the synthesis, storage, release and the termination of action of acetylcholine 2. Mention examples on inhibitors of acetylcholine synthesis, storage, and release. 3. List the locations and types of acetylcholine receptors in various organ systems. 4. Describe the effects of acetylcholine on major organ systems. 5. Correlate the pharmacokinetic properties of various choline esters and cholinomimetic alkaloids with their chemical properties. 6. List the major clinical indications and adverse effects of cholinomimetic agonists.
32	Indirectly acting cholinergic agonists (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the distribution and function of cholinesterase 2. Provide a classification and examples on drugs that inhibit cholinesterase 3. Describe the pharmacodynamic differences between direct and indirect-acting cholinomimetic agents. 4. List the major signs and symptoms of organophosphate insecticide poisoning. 5. Describe the treatment modalities of organophosphate poisoning.

33	Group B streptococci , Listeria & mycobacterium Leprae. Clostridium tetani & Clostridium Botulism. (Microbiology)	Understand the characteristics, laboratory diagnosis and management of mycobacterium leprae, group B streptococcus and listeria. – Understand the bacteriological aspects, laboratory diagnosis, management and prevention of Clostridium Tetani and Botulism.
34	Cholinergic antagonists (Pharmacology)	<ol style="list-style-type: none"> 1. Describe the effects of cholinergic antagonists on various organ systems. 2. List the major clinical indications of muscarinic antagonists. 3. List the major adverse effects of antimuscarinic agents. 4. Describe the signs, symptoms and treatment of atropine poisoning.
35	Adrenergic agonists. (Pharmacology)	<p>A.</p> <ol style="list-style-type: none"> 1. Review the steps involved in the synthesis, storage, release and the termination of action of epinephrine and nor epinephrine 2. List examples on the inhibitors of norepinephrine synthesis, storage, release and re-uptake. 3. List tissues that contain significant numbers α_1 or α_2 adrenergic receptors. 4. Describe the major systemic effects of a pure alpha agonist. 5. Indicate the major clinical applications and major adverse effect of α-receptor agonists. <p>B.</p> <ol style="list-style-type: none"> 1. List tissues that contain significant numbers of β_1 or β_2 receptors. 2. Describe the major organ system effects of a pure beta agonist, and a mixed alpha and beta agonist. 3. List the major clinical applications and adverse effect of β-receptor agonists (turn page). 4. Indicate the pharmacodynamic differences between direct and indirect acting sympathomimetic amines.
36	Rabies and, arboviruses (Microbiology)	Rabies, Arboviruses: Classification, basic structural, morphological and physical properties, epidemiology, pathogenesis, clinical presentation, laboratory diagnosis, treatment, and prevention.
37	Adrenergic antagonists I (Pharmacology)	<ol style="list-style-type: none"> 1. Indicate the differences between selective and nonselective α-receptor antagonists. 2. List the main indications and the major adverse effects of α receptors antagonists 3. Provide a classification for α-receptor antagonists.
38	Adrenergic antagonists II (Pharmacology)	<ol style="list-style-type: none"> 1. Compare the pharmacokinetics of various β-receptor antagonists 2. Describe the main indications and major adverse effects of β receptors antagonists 3. Describe the main drug-drug interactions of α and β receptors antagonists.
39	Enteroviruses. (Microbiology)	Enteroviruses : Polio viruses, coxsaki viruses, echo viruses, basic structural, morphological and physical properties, epidemiology, pathogenesis, clinical presentation, laboratory diagnosis, treatment, and prevention.
40	Ticks (Microbiology)	<ol style="list-style-type: none"> 1. Definition of Ticks 2. Morphology. 3. Life cycle. 4. Pathogenesis and clinical disease. 5. Clinical manifestations. 6. Laboratory diagnosis. 7. Treatment. 8. Prevention.

Laboratory Sessions.

Instructions:

It is important that you get prepared for your lab sessions by:

1. Studying your reading material.
2. Have a preliminary idea by having a look at your atlas.
3. Prepare a list of structure you need to identify ,Micro and Macro.
4. Then you come to the lab (with atlases and books if you wish) to develop your skills of comparison, identification and observing how things fit on each other.
5. Instructors will facilitate your learning.

No.	Title	Objectives.
1	Morphology of the Orbit, Eye and Ear Face & Neck (Anatomy 1)	Recognize individual structures. Observe how they fit on each other. Compare & contrast between your understanding, your atlas and the real thing you see in the lab.
2	Neck (Anatomy 2)	Recognize individual structures. Observe how they fit on each other. Compare & contrast between your understanding, your atlas and the real thing you see in the lab.
3	Brachial plexus and Nerves of the upper limb. Lumbo-sacral plexus and nerves of the lower limb. (Anatomy 3)	Recognize individual structures. Observe how they fit on each other. Compare & contrast between your understanding, your atlas and the real thing you see in the lab.
4	Pathology 1.	Students are expected to study computerized images of gross & microscopic findings of: CNS tumors I
5	Pathology 2.	Students are expected to study computerized images of gross & microscopic findings of: 1. Tumors II 2. Gross & microscopic findings in Multiple Sclerosis, Parkinson's disease and Alzheimer's disease and other degenerative diseases
6	Physiology 1.	Students are expected to do experiments demonstrating the following tests: 1. Visual acuity test, Snellen, Charts. 2. Color vision test using Ishihara charts.. 3. Confrontational perimetry and mapping of blind spot. 4. Use of ophthalmoscope and examination of the retina.
7	Physiology 2.	Students are expected to perform auditory tests, including Rennn's and Webber's tests. Demonstrating physiology of balance and equilibrium using Barny chair .

D. Summary of teaching activities of the module.

	Lectures	LABS	Small group discussions
Introduction	1		15
Anatomy	16	3	
Physiology	8	2	
Biochemistry	0		
Pathology	3	2	
Microbiology	5	0	
Pharmacology	7		
Public Health	0		
Total	40	7	15

**Neuroscience II
Timetable**

Week – 1

	Sun.	Mon.	Tues.	Wed.	Thu.
11:15 – 12		Case Presentation Scie – Hall 11:15	Eye & Optic nerve (Anatomy)	Neurophysiology of vision, the eye, retina and central visual pathway. (Physiology)	facial nerve. (Anatomy)
12:15 -1:0		Tumors of the nervous system (Pathology)	The Orbit, Cranial nerves III, IV and VI (Anatomy)	Trigeminal nerve, V (Anatomy)	Inner ear and cranial nerve VIII (Anatomy)
1:15 – 2				The external and middle ear (Anatomy)	Hearing. (Physiology)

Week - 2

	Sun.	Mon.	Tues.	Wed.	Thu.
8:15-11	Anat Lab1grB	Anat Lab1grC	Anat Lab1grD	Anat Lab1grE	Anat Lab1grA
	Path lab1grA	Path lab1grB	Path lab1grC	Path lab1grD	Path lab1grE
11:15 – 12	Equilibrium. (Physiology)	Sensory receptors (Physiology)	Development of head and neck. (Anatomy)	Physiology of peripheral nerves (Physiology)	Demyelinating diseases. (Pathology)
12:15 -1	Cranial nerves IX, and X. (Anatomy)	Chemical senses, taste and smell. (Physiology)	Histology of peripheral nerves. (Anatomy)	Local anesthetics. (Pharmacology)	degenerative diseases. (Pathology)
1:15 – 2		Cranial nerves XI and XII. (Anatomy)		Spinal nerves, Cervical plexus and nerves of the neck. (Anatomy)	Brachial plexus (Anatomy)

Week - 3

	Sun.	Mon.	Tues.	Wed.	Thu.
8:15-11	Anat lab2 grA	Anat lab2grB	Anat lab2grC	Anat lab2grD	Anat lab2grE
	Path lab2 grD	Path lab2grC	Path lab2grB	Path lab2grE	Path lab2grA
	Physio lab1 grC	Physio lab1grE	Physio lab1grD	Physio lab1grA	Physio lab1grB
11:15- 12	nerves of the upper limb. (Anatomy)	Spinal cord reflexes (Physiology)	Parasympathetic nervous system. (Anatomy)	Directly acting cholinergic agonists. (Pharmacology)	Cholinergic antagonists. (Pharmacology)
12:15 -1	Lumbosacral plexus and nerves of the lower limb. (Anatomy)	Prions. (Microbiology)	Functions of autonomic nervous system. Central regulation of viscera. (Physiology)	Indirectly acting cholinergic agonists. (Pharmacology)	Adrenergic agonists. (Pharmacology)
1:15 – 2		Sympathetic nervous system. (Anatomy)		Group B strep. Listeria and mycobacterium leprae. Clostridium tetani and botulism. (Microbiology)	Rabies and arboviruses. (Microbiology)

Week - 4

	Sun.	Mon	Tues.	Wed.	Thu.
8:15-11	Anat Lab3grE	Anat Lab3grC	Anat Lab3grA	Anat Lab3grD	Anat Lab3grB
	Physio lab2grA	Physio lab2grB	Physio lab2grC	Physio lab2grE	Physio lab2grD
11:15-12	Adrenergic antagonists.I (Pharmacology)	Enteroviruses. (Microbiology)	A1- Physio R Physiology Dr	D3- PharmaR Pharma Dr	B2- Pharma R Pharma Dr.
			C1- Anat R Anatomy Dr	E2- Phys R AnatDr	B1- Anat R Path Dr
			A2- Pharma R Pharma Dr.	D1- Anat R Path Dr	B3- Physio R Physio Dr.
12:15 – 1	Adrenergic antagonists.II	.	C3- Anat R Path Dr	E1- Anat R Microbio Dr.	
			A3-Pharma R Microbio Dr	E3- PhysioR - Physio Dr.	

	(Pharmacology)	(Microbiology)	C2- Physio R Anat Dr	D2- Phys R Anat Dr.	
1;15 -2					
1:15 – 2					

3-Teachingandlearningmethods:

METHODS USED:

- Lectures
- Discussions
- Practical classes
- Multidisciplinary (Paediatrics & Medicine) lectures

4- Student Assessment methods:

4-A) ATTENDANCE CRITERIA:

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Final- Theory	To be decided by Registry office.	

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Examination	Marksallocated
Finalexam: aa- Written bb- Practical	150 50
Total	200

4-D) Examinationdescription:

Examination	Description
Finalexam: aa- Written bb- Practical	□ select(MCQs),Shortessay,cases,complete, crossmatching

Case Study(PBL) of Peripheral Neuropathy for small group discussion sessions.

Please read the case very carefully.

Every word and idea is subjected for criticism.

Prepare your questions and comments for discussion in your small group.

A 57-year-old woman was seen in the neurology clinic of this hospital because of longtime numbness and weakness in her feet and legs. When she was in her early 30s, numbness developed over the anterior surfaces of her shins and ankles. In her early to mid-40s, she became unsteady when using the stairs or walking in the dark. She noticed weakness in her feet. She had

no dorsiflexion of her toes, and they tended to catch on carpets or on thresholds. Her feet occasionally ached, and she believed that her arches had become higher. Dysesthetic sensations developed in her feet, which she said felt “cold and wet.” The father of the patient had had high-arched feet, and poor balance. The patient had five siblings; two brothers had polyneuropathy, one of whom had high-arched feet and hammertoes. The patient had three children.

The patient had hammertoes but not high-arched feet. No hypertrophic nerves were palpable. On neurological examination she was alert and cooperative. She had a head tremor. She walked with forearm crutches. She was unable to walk on her toes or heels. Romberg’s sign was present. Strength in her arms and proximal legs was normal. Strength in the dorsiflexor, invertor, and evertor muscles in the feet was 2/5 bilaterally. Plantar flexor strength was 4/5. Deep-tendon reflexes were absent except for triceps jerks. Sensory examination revealed reduced sensation to light touch in the feet up to the proximal legs and to pinprick to the middle of the legs. Position sense and vibration sensation were absent at the toes and reduced at the ankles. Coordination was normal.

Laboratory studies at that time, including routine blood chemical studies, a complete blood count, liver-function tests, a lipid profile, serum protein electrophoresis, antinuclear antibody and rapid plasma reagin tests, erythrocyte sedimentation rate, and levels of vitamin B12, folate, and thyrotropin were normal. The creatine kinase level was reported to be slightly high.

Electromyography at that time showed absent sural and superficial peroneal sensory responses. Median, ulnar, and radial sensory potentials were slightly small with mildly prolonged latencies.

Peroneal and tibial motor responses were very small, and conduction velocities were slowed. Median and ulnar motor responses were of normal amplitude, but conduction velocities were mildly slow. Needle examination showed fibrillation potentials in the left extensor hallucis longus and medial gastrocnemius. No fibrillation potentials were seen in the tibialis anterior, vastus, lateralis, or muscles in the arms.

Below are three mini problems. Study these problems carefully at the beginning of the module, keep them in your mind and during the lectures follow up the information that will solve the problems.

Mini problem 1:

A 42-year-old construction worker comes to the emergency department because of severe low back pain that began after lifting a heavy object at work 2 days ago. Since awakening this morning he has had numbness in his buttocks and the soles of both feet. He has not urinated for 6 hours, and bladder catheterization leads to the drainage of 400 mL of urine. Examination shows severe pain on straight leg raising bilaterally to 20 degrees. Strength is normal except for 3/5 weakness in plantar flexion bilaterally. There is diminished pin sensation in the soles of his feet. Ankle reflexes are absent, and plantar responses are flexor.

Mini problem 2: A 29-year-old, right handed, East Indian woman presented with worsening numbness and tingling in both hands.

The patient’s symptoms began about 2 years before hospital admission, when she noted discoloration of the skin on her feet. She first noticed the rash on the top medial aspect of her left foot. A few months later, she saw a similar discoloration on the top of her right foot. She was not aware of any numbness in that region and did not pay further attention to this. Toward the beginning of her pregnancy in 1998, she became aware of tingling sensations in the fingertips of her left hand. After her pregnancy, however, these symptoms resolved. From the end of December 1999 to the beginning of January 2000, she began to experience more frequent tingling sensations in the index and middle fingers of her left hand. This gradually progressed to include all the digits of the left hand.

During this time, she also noticed a blister on her left index finger and the left middle finger, but she assumed this was the result of a burn she might have sustained, unawares, while cooking or ironing. She also noticed that she was dropping objects held in the left hand.

At this time, she sought medical attention from her internist who thought this could be arthritis and who prescribed celecoxib.

The patient traveled to India on January 26, 2000. This was the first visit to India she had made in 12 years. The tingling sensation in her left hand had become continuous and now she began to feel more numbness as well. She saw a dermatologist and a neurologist in India who examined her and the discolored patches on her feet and found them to be numb.

She underwent a skin biopsy to look for evidence of vascular or infectious changes. She was told that the skin biopsy was negative, but was prescribed antibiotics for a presumed bacterial infection.

Within days after starting the antibiotics, she began experiencing severe pain, primarily in the left shoulder and extending to the entire left arm. She also experienced further discoloration and rash on multiple areas on her body, including patches on her right foot extending to the right ankle, the left foot now extending more medially, the right side of her face, and several areas on her back. She was unaware that these areas were particularly numb.

Along with the worsening pain, she also developed numbness her right hand, more medially side (the little finger and the ring finger). During this time, she also developed daily fevers to 100-101° F (38.3-38.8° C) and felt extremely tired with very poor appetite, losing 15-16 lbs. during this time.

These symptoms continued for approximately 6 weeks, until her return to the United States on March 30. Since then, her fever has subsided and the pain is virtually gone in her shoulder region. Even the skin rashes have subsided with the corticosteroid cream given by her dermatologist in the United States.

Mini problem 3:

A 44-year-old, right-handed black woman presents with right-sided facial droop after noting left-sided facial droop 1 month earlier. The left facial droop is still resolving.

The patient has been aware of a right facial droop for the past 3 days and reports having had a mild left-sided facial droop last month, which was diagnosed as idiopathic Bell's palsy. She denies headache, focal weakness, paresthesias, or vertigo, but complains of right foot and right knee pain, both worsened by weight bearing for the past 2 months. Her joints feel stiff in the morning, and she noted a fever when she took her temperature at home. She has taken ibuprofen, which led to some improvement.

She reports increased fatigue, but denies weight loss or night sweats. Most recently, she has noticed feeling nauseated, and everything she eats tastes like butter. She also states that things "sound louder" in the right ear.

Past Medical History: No medical or significant childhood illnesses

Medications: Ibuprofen 600 mg as needed

Physical Examination

General exam is normal.

Neurological exam:

Mental status was intact.

Cranial nerves: Pupils equally round and reactive to light; visual fields full; visual acuity normal; extraocular muscles intact; right facial droop including forehead; decreased nasolabial fold on the right side; facial sensation intact; mild left-facial droop; corneal reflexes intact; dulled taste sensation on right side of tongue; hearing intact bilaterally; palate symmetric; shoulder shrug symmetric; tongue midline

Motor: 5/5 throughout, normal tone and bulk, no drift

Sensation: pinprick and vibration intact throughout

Coordination: Finger-to-nose and heel-to-shin intact

Reflexes: 2+ and symmetric

Plantar reflex: downgoing bilaterally

Gait: normal, no ataxia

Suggested reading material for small group discussion case.

What is peripheral neuropathy?

How are the peripheral neuropathies classified?

What are the symptoms of peripheral nerve damage?

What causes peripheral neuropathy?

How is peripheral neuropathy diagnosed?

What treatments are available?

What research is being done?

Where can I get more information?

What is peripheral neuropathy?

Peripheral neuropathy describes damage to the peripheral nervous system, the vast communications network that transmits information from the brain and spinal cord (the central nervous system) to every other part of the body. Peripheral nerves also send sensory information back to the brain and spinal cord, such as a message that the feet are cold or a finger is burned.

Damage to the peripheral nervous system interferes with these vital connections. Like static on a telephone line, peripheral neuropathy distorts and sometimes interrupts messages between the brain and the rest of the body.

Because every peripheral nerve has a highly specialized function in a specific part of the body, a wide array of symptoms can occur when nerves are damaged. Some people may experience temporary numbness, tingling, and pricking sensations (paresthesia), sensitivity to touch, or muscle weakness. Others may suffer more extreme symptoms, including burning pain (especially at night), muscle wasting, paralysis, or organ or gland dysfunction. People may become unable to digest food easily, maintain safe levels of blood pressure, sweat normally, or experience normal sexual function. In the most extreme cases, breathing may become difficult or organ failure may occur.

Some forms of neuropathy involve damage to only one nerve and are called mononeuropathies. More often though, multiple nerves affecting all limbs are affected-called polyneuropathy. Occasionally, two or more isolated nerves in separate areas of the body are affected-called mononeuritis multiplex.

In acute neuropathies, such as Guillain-Barré syndrome, symptoms appear suddenly, progress rapidly, and resolve slowly as damaged nerves heal. In chronic forms, symptoms begin subtly and progress slowly. Some people may have periods of relief followed by relapse. Others may reach a plateau stage where symptoms stay the same for many months or years. Some

chronic neuropathies worsen over time, but very few forms prove fatal unless complicated by other diseases. Occasionally the neuropathy is a symptom of another disorder.

In the most common forms of polyneuropathy, the nerve fibers (individual cells that make up the nerve) most distant from the brain and the spinal cord malfunction first. Pain and other symptoms often appear symmetrically, for example, in both feet followed by a gradual progression up both legs. Next, the fingers, hands, and arms may become affected, and symptoms can progress into the central part of the body. Many people with diabetic neuropathy experience this pattern of ascending nerve damage.

How are the peripheral neuropathies classified?

More than 100 types of peripheral neuropathy have been identified, each with its own characteristic set of symptoms, pattern of development, and prognosis. Impaired function and symptoms depend on the type of nerves—motor, sensory, or autonomic—that are damaged. Motor nerves control movements of all muscles under conscious control, such as those used for walking, grasping things, or talking. Sensory nerves transmit information about sensory experiences, such as the feeling of a light touch or the pain resulting from a cut. Autonomic nerves regulate biological activities that people do not control consciously, such as breathing, digesting food, and heart and gland functions. Although some neuropathies may affect all three types of nerves, others primarily affect one or two types. Therefore, doctors may use terms such as predominantly motor neuropathy, predominantly sensory neuropathy, sensory-motor neuropathy, or autonomic neuropathy to describe a patient's condition.

What are the symptoms of peripheral nerve damage?

Symptoms are related to the type of affected nerve and may be seen over a period of days, weeks, or years. Muscle weakness is the most common symptom of motor nerve damage. Other symptoms may include painful cramps and fasciculations (uncontrolled muscle twitching visible under the skin), muscle loss, bone degeneration, and changes in the skin, hair, and nails. These more general degenerative changes also can result from sensory or autonomic nerve fiber loss.

Sensory nerve damage causes a more complex range of symptoms because sensory nerves have a wider, more highly specialized range of functions. Larger sensory fibers enclosed in myelin (a fatty protein that coats and insulates many nerves) register vibration, light touch, and position sense. Damage to large sensory fibers lessens the ability to feel vibrations and touch, resulting in a general sense of numbness, especially in the hands and feet. People may feel as if they are wearing gloves and stockings even when they are not. Many patients cannot recognize by touch alone the shapes of small objects or distinguish between different shapes. This damage to sensory fibers may contribute to the loss of reflexes (as can motor nerve damage). Loss of position sense often makes people unable to coordinate complex movements like walking or fastening buttons, or to maintain their balance when their eyes are shut. Neuropathic pain is difficult to control and can seriously affect emotional well-being and overall quality of life. Neuropathic pain is often worse at night, seriously disrupting sleep and adding to the emotional burden of sensory nerve damage.

Smaller sensory fibers without myelin sheaths transmit pain and temperature sensations. Damage to these fibers can interfere with the ability to feel pain or changes in temperature. People may fail to sense that they have been injured from a cut or that a wound is becoming infected. Others may not detect pains that warn of impending heart attack or other acute conditions. (Loss of pain sensation is a particularly serious problem for people with diabetes, contributing to the high rate of lower limb amputations among this population.) Pain receptors in the skin can also become oversensitized, so that people may feel severe pain (allodynia) from stimuli that are normally painless (for example, some may experience pain from bed sheets draped lightly over the body).

Symptoms of autonomic nerve damage are diverse and depend upon which organs or glands are affected. Autonomic nerve dysfunction can become life threatening and may require emergency medical care in cases when breathing becomes impaired or when the heart begins beating irregularly. Common symptoms of autonomic nerve damage include an inability to sweat normally, which may lead to heat intolerance; a loss of bladder control, which may cause infection or incontinence; and an inability to control muscles that expand or contract blood vessels to maintain safe blood pressure levels. A loss of control over blood pressure can cause dizziness, lightheadedness, or even fainting when a person moves suddenly from a seated to a standing position (a condition known as postural or orthostatic hypotension).

Gastrointestinal symptoms frequently accompany autonomic neuropathy. Nerves controlling intestinal muscle contractions often malfunction, leading to diarrhea, constipation, or incontinence. Many people also have problems eating or swallowing if certain autonomic nerves are affected.

What causes peripheral neuropathy?

Peripheral neuropathy may be either inherited or acquired. Causes of acquired peripheral neuropathy include physical injury (trauma) to a nerve, tumors, toxins, autoimmune responses, nutritional deficiencies, alcoholism, and vascular and metabolic disorders. Acquired peripheral neuropathies are grouped into three broad categories: those caused by systemic disease, those caused by trauma from external agents, and those caused by infections or autoimmune disorders affecting nerve tissue. One example of an acquired peripheral neuropathy is trigeminal neuralgia (also known as tic douloureux), in which damage to the trigeminal nerve (the large nerve of the head and face) causes episodic attacks of excruciating, lightning-like pain on one side of the face. In some cases, the cause is an earlier viral infection, pressure on the nerve from a tumor or swollen blood vessel,

or, infrequently, multiple sclerosis. In many cases, however, a specific cause cannot be identified. Doctors usually refer to neuropathies with no known cause as idiopathic neuropathies.

Physical injury (trauma) is the most common cause of injury to a nerve. Injury or sudden trauma, such as from automobile accidents, falls, and sports-related activities, can cause nerves to be partially or completely severed, crushed, compressed, or stretched, sometimes so forcefully that they are partially or completely detached from the spinal cord. Less dramatic traumas also can cause serious nerve damage. Broken or dislocated bones can exert damaging pressure on neighboring nerves, and slipped disks between vertebrae can compress nerve fibers where they emerge from the spinal cord. Systemic diseases — disorders that affect the entire body — often cause peripheral neuropathy. These disorders may include: Metabolic and endocrine disorders. Nerve tissues are highly vulnerable to damage from diseases that impair the body's ability to transform nutrients into energy, process waste products, or manufacture the substances that make up living tissue. Diabetes mellitus, characterized by chronically high blood glucose levels, is a leading cause of peripheral neuropathy in the United States. About 60 percent to 70 percent of people with diabetes have mild to severe forms of nervous system damage. Kidney disorders can lead to abnormally high amounts of toxic substances in the blood that can severely damage nerve tissue. A majority of patients who require dialysis because of kidney failure develop polyneuropathy. Some liver diseases also lead to neuropathies as a result of chemical imbalances.

Hormonal imbalances can disturb normal metabolic processes and cause neuropathies. For example, an underproduction of thyroid hormones slows metabolism, leading to fluid retention and swollen tissues that can exert pressure on peripheral nerves. Overproduction of growth hormone can lead to acromegaly, a condition characterized by the abnormal enlargement of many parts of the skeleton, including the joints. Nerves running through these affected joints often become entrapped.

Vitamin deficiencies and alcoholism can cause widespread damage to nerve tissue. Vitamins E, B1, B6, B12, and niacin are essential to healthy nerve function. Thiamine deficiency, in particular, is common among people with alcoholism because they often also have poor dietary habits. Thiamine deficiency can cause a painful neuropathy of the extremities. Some researchers believe that excessive alcohol consumption may, in itself, contribute directly to nerve damage, a condition referred to as alcoholic neuropathy.

Vascular damage and blood diseases can decrease oxygen supply to the peripheral nerves and quickly lead to serious damage to or death of nerve tissues, much as a sudden lack of oxygen to the brain can cause a stroke. Diabetes frequently leads to blood vessel constriction. Various forms of vasculitis (blood vessel inflammation) frequently cause vessel walls to harden, thicken, and develop scar tissue, decreasing their diameter and impeding blood flow. This category of nerve damage, in which isolated nerves in different areas are damaged, is called mononeuropathy multiplex or multifocal mononeuropathy.

Connective tissue disorders and chronic inflammation can cause direct and indirect nerve damage. When the multiple layers of protective tissue surrounding nerves become inflamed, the inflammation can spread directly into nerve fibers. Chronic inflammation also leads to the progressive destruction of connective tissue, making nerve fibers more vulnerable to compression injuries and infections. Joints can become inflamed and swollen and entrap nerves, causing pain.

Cancers and benign tumors can infiltrate or exert damaging pressure on nerve fibers. Tumors also can arise directly from nerve tissue cells. Widespread polyneuropathy is often associated with the neurofibromatoses, genetic diseases in which multiple benign tumors grow on nerve tissue. Neuromas, benign masses of overgrown nerve tissue that can develop after any penetrating injury that severs nerve fibers, generate very intense pain signals and sometimes engulf neighboring nerves, leading to further damage and even greater pain. Neuroma formation can be one element of a more widespread neuropathic pain condition called complex regional pain syndrome or reflex sympathetic dystrophy syndrome, which can be caused by traumatic injuries or surgical trauma. Paraneoplastic syndromes, a group of rare degenerative disorders that are triggered by a person's immune system response to a cancerous tumor, also can indirectly cause widespread nerve damage.

Repetitive stress frequently leads to entrapment neuropathies, a special category of compression injury. Cumulative damage can result from repetitive, forceful, awkward activities that require flexing of any group of joints for prolonged periods. The resulting irritation may cause ligaments, tendons, and muscles to become inflamed and swollen, constricting the narrow passageways through which some nerves pass. These injuries become more frequent during pregnancy, probably because weight gain and fluid retention also constrict nerve passageways.

Toxins can also cause peripheral nerve damage. People who are exposed to heavy metals (arsenic, lead, mercury, thallium), industrial drugs, or environmental toxins frequently develop neuropathy. Certain anticancer drugs, anticonvulsants, antiviral agents, and antibiotics have side effects that can include peripheral nerve damage, thus limiting their long-term use.

Infections and autoimmune disorders can cause peripheral neuropathy. Viruses and bacteria that can attack nerve tissues include herpes varicella-zoster (shingles), Epstein-Barr virus, cytomegalovirus, and herpes simplex-members of the large family of human herpes viruses. These viruses severely damage sensory nerves, causing attacks of sharp, lightning-like pain. Postherpetic neuralgia often occurs after an attack of shingles and can be particularly painful.

The human immunodeficiency virus (HIV), which causes AIDS, also causes extensive damage to the central and peripheral nervous systems. The virus can cause several different forms of neuropathy, each strongly associated with a specific stage of active immunodeficiency disease. A rapidly progressive, painful polyneuropathy affecting the feet and hands is often the first clinically apparent sign of HIV infection.

Lyme disease, diphtheria, and leprosy are bacterial diseases characterized by extensive peripheral nerve damage. Diphtheria and leprosy are now rare in the United States, but Lyme disease is on the rise. It can cause a wide range of neuropathic disorders, including a rapidly developing, painful polyneuropathy, often within a few weeks after initial infection by a tick bite.

Viral and bacterial infections can also cause indirect nerve damage by provoking conditions referred to as autoimmune disorders, in which specialized cells and antibodies of the immune system attack the body's own tissues. These attacks typically cause destruction of the nerve's myelin sheath or axon (the long fiber that extends out from the main nerve cell body).

Some neuropathies are caused by inflammation resulting from immune system activities rather than from direct damage by infectious organisms. Inflammatory neuropathies can develop quickly or slowly, and chronic forms can exhibit a pattern of alternating remission and relapse. Acute inflammatory demyelinating neuropathy, better known as Guillain-Barré syndrome, can damage motor, sensory, and autonomic nerve fibers. Most people recover from this syndrome although severe cases can be life threatening. Chronic inflammatory demyelinating polyneuropathy (CIDP), generally less dangerous, usually damages sensory and motor nerves, leaving autonomic nerves intact. Multifocal motor neuropathy is a form of inflammatory neuropathy that affects motor nerves exclusively; it may be chronic or acute.

Inherited forms of peripheral neuropathy are caused by inborn mistakes in the genetic code or by new genetic mutations. Some genetic errors lead to mild neuropathies with symptoms that begin in early adulthood and result in little, if any, significant impairment. More severe hereditary neuropathies often appear in infancy or childhood.

The most common inherited neuropathies are a group of disorders collectively referred to as Charcot-Marie-Tooth disease. These neuropathies result from flaws in genes responsible for manufacturing neurons or the myelin sheath. Hallmarks of typical Charcot-Marie-Tooth disease include extreme weakening and wasting of muscles in the lower legs and feet, gait abnormalities, loss of tendon reflexes, and numbness in the lower limbs.

How is peripheral neuropathy diagnosed?

Diagnosing peripheral neuropathy is often difficult because the symptoms are highly variable. A thorough neurological examination is usually required and involves taking an extensive patient history (including the patient's symptoms, work environment, social habits, exposure to any toxins, history of alcoholism, risk of HIV or other infectious disease, and family history of neurological disease), performing tests that may identify the cause of the neuropathic disorder, and conducting tests to determine the extent and type of nerve damage.

A general physical examination and related tests may reveal the presence of a systemic disease causing nerve damage. Blood tests can detect diabetes, vitamin deficiencies, liver or kidney dysfunction, other metabolic disorders, and signs of abnormal immune system activity. An examination of cerebrospinal fluid that surrounds the brain and spinal cord can reveal abnormal antibodies associated with neuropathy. More specialized tests may reveal other blood or cardiovascular diseases, connective tissue disorders, or malignancies. Tests of muscle strength, as well as evidence of cramps or fasciculations, indicate motor fiber involvement. Evaluation of a patient's ability to register vibration, light touch, body position, temperature, and pain reveals sensory nerve damage and may indicate whether small or large sensory nerve fibers are affected.

Based on the results of the neurological exam, physical exam, patient history, and any previous screening or testing, additional testing may be ordered to help determine the nature and extent of the neuropathy.

Computed tomography, or CT scan, is a noninvasive, painless process used to produce rapid, clear two-dimensional images of organs, bones, and tissues. X-rays are passed through the body at various angles and are detected by a computerized scanner. The data is processed and displayed as cross-sectional images, or "slices," of the internal structure of the body or organ. Neurological CT scans can detect bone and vascular irregularities, certain brain tumors and cysts, herniated disks, encephalitis, spinal stenosis (narrowing of the spinal canal), and other disorders.

Magnetic resonance imaging (MRI) can examine muscle quality and size, detect any fatty replacement of muscle tissue, and determine whether a nerve fiber has sustained compression damage. The MRI equipment creates a strong magnetic field around the body. Radio waves are then passed through the body to trigger a resonance signal that can be detected at different angles within the body. A computer processes this resonance into either a three-dimensional picture or a two-dimensional "slice" of the scanned area.

Electromyography (EMG) involves inserting a fine needle into a muscle to compare the amount of electrical activity present when muscles are at rest and when they contract. EMG tests can help differentiate between muscle and nerve disorders.

Nerve conduction velocity (NCV) tests can precisely measure the degree of damage in larger nerve fibers, revealing whether symptoms are being caused by degeneration of the myelin sheath or the axon. During this test, a probe electrically stimulates a nerve fiber, which responds by generating its own electrical impulse. An electrode placed further along the nerve's pathway measures the speed of impulse transmission along the axon. Slow transmission rates and impulse blockage tend to indicate damage to the myelin sheath, while a reduction in the strength of impulses is a sign of axonal degeneration.

Nerve biopsy involves removing and examining a sample of nerve tissue, most often from the lower leg. Although this test can provide valuable information about the degree of nerve damage, it is an invasive procedure that is difficult to perform and may itself cause neuropathic side effects. Many experts do not believe that a biopsy is always needed for diagnosis.

Skin biopsy is a test in which doctors remove a thin skin sample and examine nerve fiber endings. This test offers some unique advantages over NCV tests and nerve biopsy. Unlike NCV, it can reveal damage present in smaller fibers; in contrast to conventional nerve biopsy, skin biopsy is less invasive, has fewer side effects, and is easier to perform.

What treatments are available?

No medical treatments now exist that can cure inherited peripheral neuropathy. However, there are therapies for many other forms. Any underlying condition is treated first, followed by symptomatic treatment. Peripheral nerves have the ability to regenerate, as long as the nerve cell itself has not been killed. Symptoms often can be controlled, and eliminating the causes of specific forms of neuropathy often can prevent new damage.

In general, adopting healthy habits—such as maintaining optimal weight, avoiding exposure to toxins, following a physician-supervised exercise program, eating a balanced diet, correcting vitamin deficiencies, and limiting or avoiding alcohol consumption—can reduce the physical and emotional effects of peripheral neuropathy. Active and passive forms of exercise can reduce cramps, improve muscle strength, and prevent muscle wasting in paralyzed limbs. Various dietary strategies can improve gastrointestinal symptoms. Timely treatment of injury can help prevent permanent damage. Quitting smoking is particularly important because smoking constricts the blood vessels that supply nutrients to the peripheral nerves and can worsen neuropathic symptoms. Self-care skills such as meticulous foot care and careful wound treatment in people with diabetes and others who have an impaired ability to feel pain can alleviate symptoms and improve quality of life. Such changes often create conditions that encourage nerve regeneration.

Systemic diseases frequently require more complex treatments. Strict control of blood glucose levels has been shown to reduce neuropathic symptoms and help people with diabetic neuropathy avoid further nerve damage. Inflammatory and autoimmune conditions leading to neuropathy can be controlled in several ways. Immunosuppressive drugs such as prednisone, cyclosporine, or azathioprine may be beneficial. Plasmapheresis—a procedure in which blood is removed, cleansed of immune system cells and antibodies, and then returned to the body—can limit inflammation or suppress immune system activity. High doses of immunoglobulins, proteins that function as antibodies, also can suppress abnormal immune system activity.

Neuropathic pain is often difficult to control. Mild pain may sometimes be alleviated by analgesics sold over the counter. Several classes of drugs have recently proved helpful to many patients suffering from more severe forms of chronic neuropathic pain. These include mexiletine, a drug developed to correct irregular heart rhythms (sometimes associated with severe side effects); several antiepileptic drugs, including gabapentin, phenytoin, and carbamazepine; and some classes of antidepressants, including tricyclics such as amitriptyline. Injections of local anesthetics such as lidocaine or ical patches containing lidocaine may relieve more intractable pain. In the most severe cases, doctors can surgically destroy nerves; however, the results are often temporary and the procedure can lead to complications.

Mechanical aids can help reduce pain and lessen the impact of physical disability. Hand or foot braces can compensate for muscle weakness or alleviate nerve compression. Orthopedic shoes can improve gait disturbances and help prevent foot injuries in people with a loss of pain sensation. If breathing becomes severely impaired, mechanical ventilation can provide essential life support.

Surgical intervention often can provide immediate relief from mononeuropathies caused by compression or entrapment injuries. Repair of a slipped disk can reduce pressure on nerves where they emerge from the spinal cord; the removal of benign or malignant tumors can also alleviate damaging pressure on nerves. Nerve entrapment often can be corrected by the surgical release of ligaments or tendons.

What research is being done?

The National Institute of Neurological Disorders and Stroke (NINDS), a component of the Federal government's National Institutes of Health (NIH) within the U.S. Department of Health and Human Services, has primary responsibility for research on peripheral neuropathy. Current research projects funded by the NINDS involve investigations of genetic factors associated with hereditary neuropathies, studies of biological mechanisms involved in diabetes-associated neuropathies, efforts to gain

greater understanding of how the immune system contributes to peripheral nerve damage, and efforts to develop new therapies for neuropathic symptoms.

Because specific genetic defects have been identified for only a fraction of the known hereditary neuropathies, the Institute sponsors studies to identify other genetic defects that may cause these conditions. Presymptomatic diagnosis may lead to therapies for preventing nerve damage before it occurs, and gene replacement therapies could be developed to prevent or reduce cumulative nerve damage.

Several NINDS-funded studies are investigating some of the possible biological mechanisms responsible for the many forms of neuropathy, including the autonomic neuropathies that affect people with diabetes. The Institute also is funding studies to measure the frequency and progression rates of diabetic neuropathies, examine the effects of these disorders on quality of life, and identify factors that may put certain individuals at greater risk for developing diabetes-associated neuropathies.

Scientists have found that the destructive effects of abnormal immune system activity cause many neuropathies for which a cause could not previously be identified. However, the exact biological mechanisms that lead to this nerve damage are not yet well understood. Many NINDS-sponsored studies are studying inflammatory neuropathies, both in research animals and in humans, to clarify these mechanisms so that therapeutic interventions can be developed.

Neuropathic pain is a primary target of NINDS-sponsored studies aimed at developing more effective therapies for symptoms of peripheral neuropathy. Some scientists hope to identify substances that will block the brain chemicals that generate pain signals, while others are investigating the pathways by which pain signals reach the brain.

Studies of neurotrophic factors represent one of the most promising areas of research aimed at finding new, more effective treatments for peripheral neuropathies. These substances, produced naturally by the body, protect neurons from injury and encourage their survival. Neurotrophic factors also help maintain normal function in mature nerve cells, and some stimulate axon regeneration. Several NINDS-sponsored studies seek to learn more about the effects of these powerful chemicals on the peripheral nervous system and may eventually lead to treatments that can reverse nerve damage and cure peripheral nerve disorders.

5-Recommended reading material:

Anatomy:

1. Clinical Neuroanatomy. By R. S. Snell, eighth edition.
2. Clinical Anatomy for Medical Students. By R. S. Snell, eighth edition.
3. Basic Histology. By C. Junqueira, Twelfth edition.
4. Before We Are Born. By K.L. Moore and T.V.N. Persaud, sixth edition.
5. www.medicalstudent.com or search the web for any subject of your preference.

Pathology:

1. Basic Pathology. By Kumar, Cotran and Robbins eighth edition.
2. Essential Pathology. By Rubin. third Edition.
3. Supplementary handouts.

Physiology:

- Text Book of Medical Physiology. By Guyton & Hall , Tenth edition.

Pharmacology:

1. Lippincott's Illustrated Reviews: Pharmacology, fourth Edition.
2. Goodman and Gilman's: The pharmacological basis of therapeutics, eleventh edition.
3. Basic and clinical pharmacology, Bertram and Katzung, eleventh edition.
4. Clinical Pharmacology. D.R. Laurence, P.N. Bennet, and M.J. Brown. Churchill Livingstone. eighth edition.

Microbiology:

- Medical Microbiology. By John C Sherris. Third edition



21 Sep. University of Medical and Applied sciences

Faculty of Medicine
Dept of Neuroscience - Division of Psychiatry

A) Basic Information

1. Course title: Clinical Psychology (Behavioral Science)
2. Specialty: M.B.B.S. program
3. Department offering the course: Dept of Neuroscience - Division of Psychiatry
4. Academic year: First semester Fourth year
5. Date of specification approval: Department council date:
6. Internal Evaluator :Prof . Dr. -----
7. Allocated marks: 150 marks.
8. Course duration: 8 weeks of teaching.
9. Course Code: MED411
10. Credit Hours: 3 Credits

B) Professional Information:

A. Course description

This course on behavioral science (clinical psychology) has two purposes: to introduce you to psychosocial aspects of medical practice and to offer you an overview of clinical psychiatry. Psychiatry has as its allied disciplines sociology and psychology. Behavioral science includes behavioral biology, including biochemical, physiological and pharmacological correlates of behavior; individual behavior including emotions, life cycle, motivation, personality and its psychopathology; and interpersonal and social behavior. Most lecturers are clinicians. It is, therefore, to be expected that the material covered in this course will be clinically relevant. In view of the limited time available, not every topic can be covered. Although some lecturers distribute lecture notes, others may not. You are welcome to take notes in classes.

The course is organized into many sections that cover the human health behavior from the biological, psychological and social perspectives

B. Course Objectives:

- To understand human behavior in health and disease.
- To understand psychosocial aspects of disease.
- To prepare you for Psychiatry Clerkship.

Format:

The course is delivered through lectures and or seminars one hour daily for 8 weeks. The content of the course is as follows:

SCHEDULE AND LEARNING OBJECTIVES:

1. Orientation to the Course; Biopsychosocial Model; Doctor/patient Relationship

Objectives:

1. To understand the course requirements and the grading policy.
2. To explain the biopsychosocial model of patient care.
3. To identify factors which influence the success of the physician-patient relationship.

2. Growth and Development in Infancy and Childhood, ADHD, Common behavioral

Objectives:

1. To identify normal developmental milestones as well as common deviations
2. To name key concepts presented by the major child development theorists
3. To discuss diagnosis and treatment of ADHD

problem

3. Adolescent Development, Common Health and Behavioral Issues

Objectives:

1. To recognize the major developmental tasks of adolescence
2. To develop appropriate strategies for establishing rapport with these adolescent patients and for confronting behavioral problems

4. Adult Behavioral Concerns: Sexual Health and Chronic Disease Management

Objectives:

1. To understand appropriate strategies for managing patients with chronic disease
2. To recognize some common sexual health issues in adults.

5. Geriatric Issues, Aging, Death and Dying, End of Life

Objectives:

1. To identify the unique problems and psychosocial issues which influence the older patient
2. To explore some ways the physician can address these needs

6. Stress and Illness

Objectives:

1. To examine ways in which stressful life events are related to health/illness.
2. To understand how some coping strategies affect susceptibility to illness.
3. To learn effective ways of managing stress.

7. Stress and coping

Objectives

1. To Describe the impact of stress on health.
2. To • List common symptoms of stress.
3. To • Identify coping strategies for stress.

8. Brain and behavior

Objectives

By the end of this course you should be able to demonstrate an understanding of:

1. the main structures of the brain and nervous system
2. how neuronal and brain functioning correlates with psychological experiences
3. the impact of physiological processes on psychological experience
4. research findings related to biological psychology, neuroscience and neuropsychology

9. Behavioral Genetics

Objectives

1. Describe the genetic methods applied to behavior
2. Describe role of genetics and environment in conditions such as MR, IQ, Substance abuse, schizophrenia, affective disorders, and dementing illnesses
3. Describe the value of twin studies and adoption studies in behavioral genetic studies
4. Define heritability

10. Psychoneuroimmunology (PNI)

Objectives

1. How do psychological processes influence immune function and health?
2. Brief overview of bidirectional communication between CNS and Immune System
3. Brief overview of the immune system
4. Discuss how stressor and classical conditioning alter immunity

11. Patient encounter ,Professionalism, Delivering Bad News, Difficult Encounters

Objectives:

1. To identify physician behaviors which maximize patient cooperation
2. To understand how to be effective in helping patients change their behavior.
 1. To understand the nature of professionalism for the physician.
 2. To develop techniques for presenting unexpected or unwanted information
 3. To identify strategies for managing difficult encounters with patients.

12. Psychopathology Classification System for Mental Disorders, Anxiety Disorders

Objectives:

1. To understand the structure of the diagnostic system for mental disorders
2. To recognize and differentiate among common anxiety disorders
3. To identify some appropriate treatment strategies

13. Psychotic Disorders, Schizophrenia, Mood Disorders

14. Personality Disorders

Objectives:

1. To identify the characteristics of psychosis
2. To understand the symptoms of schizophrenia
3. To understand the symptoms of mood disorders
4. To differentiate between thought disorders and mood disorders

Objectives:

1. The student will be able to appreciate some of the basic theories underlying personality disorders.
2. The student will be able to identify the difference between personality disorders and personality traits.
3. The student will be able to identify the basic features of the personality disorders

15. Sleep Disorders

Objectives:

1. To understand the dynamics of sleep disorders, both physical and psychological.
2. To be able to differentiate between various form of sleep disorders
3. To understand the rationale for therapies

16. Somatization, Adjustment Disorders, Eating Disorders

17. Psychodynamics, Behavioral

Objectives:

1. To identify the characteristics of somatoform disorders,
2. To identify the characteristics of adjustment disorders

Objectives:

1. To survey some well-known theories of behavior.
2. To understand the application of these theories to the practice of medicine.

18. Psychology and Psychobiology of Child Abuse

Objectives:

1. To recognize signs of different kinds of child abuse
2. To understand the role of the physician in situations of child abuse

19.

Substance Abuse and Addictions—Alcohol and Other Drugs

Objectives:

1. To discuss the physiological, psychological, and social factors related to addictions.
2. To define alcohol abuse and alcohol dependence.
3. To learn a model for assessing a patient's readiness to change.

20.

Do

Objectives:

1. To discuss the dynamics of domestic violence.
2. To recognize the signs and symptoms which might be seen in patients.
3. To develop intervention and referral strategies.

Domestic Violence: the Role of the Physician

21. Suicide and attempted suicide

Objectives

1. Identify psychological, familial, and genetic factors in suicidal behavior.
2. Describe prevalence of suicide and suicide attempts.
3. List types of suicidal behavior.
4. Recognize what physicians can do to identify suicidal intent and intervene.

22. Human Sexuality

Objectives

1. Describe sexual development across the lifespan.
2. Discuss the anatomy and physiology of the sexual re-sponse cycle for both sexes.
3. Summarize the major sexual dysfunctions.
4. List sexually transmitted diseases and risky sexual behaviors.
5. Summarize medications that may affect sexual desire.
6. Consider the effects of gender and lifestyle on health care.
7. Identify physician factors important in dealing with a patient's sexuality.
8. Describe the relevance of explorin

Evaluation:

Attendance and Participation:		10
First Examination(mid-course (50 MCQs):	50	
Final Examination (40 MCQs):	40	

Suggested textbooks:

1. Synopsis of Psychiatry, 8th Edition, Kaplan H. & Sadock B. (1998)
2. Human Behavior: An Introduction for Medical Students, Stoudemire, Alan 3rdEdition, 1997, Lippincott
3. Behavioral Science in Medicine, B Fadem. Lipincott Williams & Williams, 2003



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of General Surgery**

A)Basic Information

1. **Course title: General Surgery,A**
2. **Specialty: M.B.B.S. program**
3. **Department offering the course: Department of General Surgery**
4. **Academic year: First semester Fourth year**
5. **Date of specification approval: Department council date:**
6. **Internal Evaluator :Prof . Dr. -----**
7. **Allocated marks: 450marks.**
8. **Course duration: 10 weeksof teaching.**
9. **Course Code: MED412**
10. **Credit Hours: 9 Credits**

B)Professional Information:

I. Course description

The ten-week surgical rotation is an intense clinical experience that introduces students to the basic principles of surgery. Students rotate on the Surgical Teams at various hospitals that are affiliated to the medical school in the university. 8 weeks of general surgery and two-week blocks of surgical subspecialties make up the rotation. During the rotations, students learn pre-, peri-, and post-operative evaluation and management of surgical diseases. Time is spent on the wards, in outpatient clinics, and in the operating room.

II. General Objectives:

At the conclusion of their rotations, all students should be capable of:

- Performing a complete physical examination for the areas of head and neck, musculoskeletal and abdomen.
- Demonstrating an adequate knowledge of surgical diseases
- Performing both Complete and Focused patient workups and presentations
- Displaying professional behavior and functioning effectively as a member of a health care team

III. Specific Objectives of the Course:

After studying the material covered in the lectures and bed-side teaching sessions of this course, the student is expected to achieve the following specific objectives:

No.	Subject	Specific Objectives
1	Fluids and electrolytes	<ul style="list-style-type: none"> • Describe the extracellular, intracellular and intravascular volume in a 70-kg man • List at least four endogenous factors that affect renal control of sodium and water excretion. • Describe the 24-hr sensible and insensible fluid and electrolyte losses in the routine postoperative patient • Identify the signs and symptoms of dehydration • List and describe the objective ways of measuring fluid balance • Know the normal electrolyte values in the normal body secretions • Describe the possible causes(differential diagnosis), appropriate laboratory studies needed, and the treatment of common electrolyte and fluid disorders
2	Bleeding disorders and blood transfusion	<ul style="list-style-type: none"> • Discuss medical history and physical findings that might identify the presence and etiology of a bleeding disorder. • List the minimum preoperative screening tests necessary when the patient is asymptomatic • Name the etiologic factors contributing to bleeding disorders • Name the common surgical conditions leading to disseminated intravascular coagulation (DIC). • Outline the importance of major and minor blood groups • Describe how to obtain and store blood • List the indications for blood transfusion in surgical practice • Recognize hazards of blood transfusion and how to avoid those (Infections, reactions). • Identify the different components of blood and how to order each of them.
3	Shock	<ul style="list-style-type: none"> • Define shock. • List four categories of shock (hypovolemic, cardiogenic, septicemic, neurogenic). • List at least three causes for each type of shock.

		<ul style="list-style-type: none"> • Contrast the effects of each category of shock on heart, kidney and brain. • Recognize the hemodynamic features, diagnostic tests, and physical findings that differentiate each type of shock. • Name and briefly describe the monitoring techniques that help in diagnosis and management of shock. • Outline the general principles of fluid, pharmacologic, and surgical intervention for each category of shock.
4	Burns	<ul style="list-style-type: none"> • Obtain relevant history for burns (flame, scold, closed space, exposure time, possible associated injuries) • Describe burn depth and size in a patient with a major burn • Determine percentage and degree of burns • List the indications for admission • Discuss pain management. • Outline fluid replacement. • Discuss wound management (open, closed, principles of antiseptic solutions). • Know the value of skin grafting.
5	Surgical site infections and surgical infections	<ul style="list-style-type: none"> • List the factors that contribute to infection after a surgical procedure • Identify the types of surgical infections • Describe the principles of prophylactic antibiotic use • Describe the diagnostic features and indicated treatment for common skin infection • Describe the clinical features and treatment of anaerobic and synergistic gangrene • Describe the diagnostic evaluation for an intra-abdominal abscess. • List the causes of postoperative fever and discuss the diagnostic steps for evaluation.
6	Wound healing and its disorders	<ul style="list-style-type: none"> • Define a wound and describe the sequence and approximate time frame of the phases of wound healing. • Describe the essential elements and significance of granulation tissue. • Describe the three types of wound healing and the elements of each. • Describe the phases of wound healing distinct to each type of wound. • Describe clinical factors that decrease collagen synthesis and retard wound healing. • Describe the rationale for the uses of absorbable and nonabsorbable sutures. • Discuss the functions of a dressing. • Define a clean a contaminated and an infected wound and describe the management of each.
7	Multiple injuries: first aid and triage. Management of specific traumas	<ul style="list-style-type: none"> • Describe the conditions, signs, and symptoms commonly associated with upper airway obstruction. • Describe the risks associated with the management of an airway in the traumatized patient. • Outline the options available and the sequence of steps required to control an airway in the traumatized patient, including protection of the cervical spine. • List the identifying characteristics of patients who are likely to have upper airway obstruction. • Define shock, including the pathophysiology. • 6. List four types of shock and outline the management of a patient in hemorrhagic shock. • List the indications and contraindications for use of a pneumatic antishock garment in patients with hemorrhagic shock. • List six thoracic injuries that are immediately life threatening and should be identified in the primary survey and six that potentially life threatening and should be identified in the secondary survey. Outline a treatment plan for each injury. • List the indications for chest tube insertion, pericardiocentesis, and needle thoracentesis. Outline the technique for each. • List three common thoracic injuries that, although not life threatening, need skilled care. • Define the limits of the abdominal cavity, demonstrate the abdominal examination for trauma and outline the tests that are of use in abdominal trauma. • Differentiate between blunt and penetrating trauma. • List the indications, contraindications, and limitations of peritoneal lavage.

		<p>Describe a positive peritoneal lavage.</p> <ul style="list-style-type: none"> • Outline the pathophysiologic events leading to decreased levels of consciousness, including the unique anatomic and physiologic features of head and spinal injuries. • List the three functions assessed by the Glasgow Coma Scale and outline the point scale. • Outline the initial management of the unconscious patient and the patient with suspected spinal cord injury. • List the test results and assessment results that should be passed to neurologic consultants. • Outline the differences between non-life-threatening and life-threatening extremity injuries and the management of each. • Describe a thorough examination of the extremities in a traumatized patient.
8	Benign breast disorders	<ul style="list-style-type: none"> • Identify and describe the major types of breast lumps. • List common risk factors for benign breast disease • List diagnostic modalities and their sequence in the workup of a patient with a breast mass and a patient with nipple discharge. • Describe the natural history of benign breast disorders • Describe the treatment for a fibroadenoma and fibrocystic diseases
9	Malignant breast disorders	<ul style="list-style-type: none"> • List risk factors for breast cancer. • Describe the natural history of malignant breast neoplasms. • List and discuss the types of breast cancer and their clinical staging. • Define the anatomic limits of surgical treatments of breast cancer. • List and discuss the treatment options for regional and systemic breast cancer (surgical, nonsurgical, and combined). • Describe the rationale for adjuvant chemotherapy, radiation, and hormonal therapy in the treatment of breast cancer. • List the current survival and recurrence rates of treated breast cancer, according to clinical stage. • Define a treatment plan for local recurrence and metastatic breast
10	Esophageal disorders	<ul style="list-style-type: none"> • Describe esophageal hiatal hernia with regard to anatomic type (sliding and paraesophageal) and need for treatment. • Describe the anatomic and physiologic factors predisposing to reflux esophagitis. • Describe the symptoms of reflux esophagitis and discuss the diagnostic procedures used for confirmation. • List the indications for operative management of esophageal reflux and discuss the physiologic basis for the antireflux procedure used. • Describe the pathophysiology and clinical symptoms associated with achalasia of the esophagus. • List the common esophageal diverticula, their location, symptomatology, and pathogenesis. • With particular reference to etiologic factors, differentiate pulsion and traction diverticula of the esophagus. • Describe and recognize the radiologic findings that characterize motility disorders of the esophagus, including achalasia and manometric evaluation of the lower esophageal sphincter. • List the symptoms suggestive of an esophageal malignancy. • Outline a plan for diagnostic evaluation of a patient with a suspected esophageal tumor. • Describe the natural history of a malignant lesion of the esophagus and list treatment options, indicating the order of preference. • List the common types of benign esophageal neoplasms and briefly describe how they are differentiated from malignant lesions. • Describe the etiology and presentation of traumatic perforation of the esophagus and the physical findings that occur early and late after such an injury.
11	<ol style="list-style-type: none"> 1. Complication of Peptic ulcer disease. 2. Gastric malignancies 	<ul style="list-style-type: none"> • Compare and contrast the common symptoms and pathogenesis of gastric and duodenal ulcer disease, including patterns of acid secretion. • Discuss the significance of the anatomic location of either a gastric or duodenal

		<ul style="list-style-type: none"> ulcer. Discuss the diagnostic value of upper gastrointestinal roentgenograms, endoscopy with biopsy, gastric analysis, serum gastrin levels, and the secretin stimulation test in patients with suspected peptic ulcer disease. Describe in detail the nonoperative management of patients with peptic ulcer disease. Discuss the complications of peptic ulcer disease, including clinical presentation, diagnostic workup, and appropriate surgical treatment. List the clinical and laboratory features that differentiate the Zollinger-Ellison syndrome (gastrinoma) from duodenal ulcer disease. Compare the risk of carcinoma in patient with gastric ulcer disease with the risk in those with duodenal ulcer disease. Describe and discuss the common operations performed for duodenal and gastric ulcer disease as well as the morbidity associated with each procedure. Discuss the commonly recognized side effects associated with duodenal and gastric ulcer disease surgery, including treatment plans for each. Identify premalignant conditions, epidemiologic factors, and clinical features in patients with gastric adenocarcinoma. Describe the common types of neoplasm that occur in the stomach, and discuss appropriate diagnostic procedures, therapeutic modalities, and prognosis for each. List the general principles of curative and palliative surgical procedures for patients with gastric neoplasm
12	Vermiform appendix	<ul style="list-style-type: none"> List the signs and symptoms of acute appendicitis Formulate a differential diagnosis Outline a diagnostic work up in patients with suspected acute appendicitis List common complications of a ruptured appendix Describe the incidence and management of appendiceal carcinoid Describe the clinical presentation of Meckel's diverticulum MD Discuss the treatment of MD
13	Colonic and rectal tumors	<ul style="list-style-type: none"> Identify the common symptoms and signs of the carcinoma of the colon and rectum. Discuss the appropriate laboratory, endoscopic, and x-ray studies for the diagnosis of carcinoma of the colon and rectum Outline the treatment options including radiochemotherapy Describe the postoperative follow up including discussion of the role of the carcinoembryonic antigen CEA in detecting recurrence Using TNM and Dukes classification, discuss the staging and 5-year survival rate
14	Diverticulosis and mesenteric ischemia	<ul style="list-style-type: none"> Describe the clinical findings of diverticular disease, differentiating the symptoms and signs of diverticulitis and diverticulosis. Discuss complications of diverticular disease and their appropriate treatment Describe clinical findings and presentation as well as treatment of mesenteric ischemia. Discuss massive lower GI bleeding including differential diagnosis, initial management, appropriate diagnostic tests and treatment.
15	Inflammatory bowel disease	<ul style="list-style-type: none"> Differentiate ulcerative colitis UC and Crohn's disease CD of the colon in terms of history, pathology, x-ray findings, treatment and risk of cancer Discuss the role of surgery in the treatment of UC and CD complications. Discuss the nonoperative therapy of CD and UC
16	Intestinal obstruction	<ul style="list-style-type: none"> List signs, symptoms, and diagnostic aids for evaluating presumed large bowel obstruction. Discuss at least four causes of colonic obstruction in the adult patient, including a discussion of frequency of each cause. Outline a plan for diagnostic studies, preoperative management, and treatment of volvulus, of intussusception, of impaction, and of obstructing colon cancer. Given a patient with mechanical large- or small- bowel obstruction, discuss the

		potential complications if the treatment is inadequate.
17	Acute perianal conditions	<ul style="list-style-type: none"> • Discuss the anatomy of hemorrhoids, including the four grades encountered clinically; differentiate internal and external hemorrhoids. • Discuss the etiologic factors and predisposing conditions in the development of hemorrhoidal disease. • Describe the symptoms and signs of patients with external hemorrhoids; with internal hemorrhoids. • Outline the principles of management of patients with symptomatic external and internal hemorrhoids, including the roles of nonoperative and operative management. • Discuss the role of anal crypts in perianal infection, and describe the various types of perianal infections. • Outline the symptoms and physical findings of patients with perianal infection. • Outline the principles of management of patients with perianal infections, including the role of antibiotics, incision and drainage, and primary fistulectomy. • Define fissure-in-ano. • Describe the symptoms and physical findings of patients with fissure-in-ano. • Outline the principles of management of patients with fissure-in-ano.
18	Complications of gallstones and jaundice	<ul style="list-style-type: none"> • List the common types of gallstones and describe the pathophysiology leading to their formation. • List several diseases that predispose to gallstones. • Describe the signs and symptoms in a patient with biliary colic. Contrast these symptoms with those of acute cholecystitis. • List the tests commonly used in the diagnosis of calculus biliary tract disease and describe the indications for, limitations, and potential complications of each. • Describe the likely natural history of a young patient with asymptomatic gallstones. • List the possible complications of biliary calculi and describe the history, physical examination, and laboratory findings for each. • Outline the medical and surgical management of a patient with acute cholecystitis. • Describe the signs, symptoms, and management of choledocholithiasis. • Outline a diagnostic and management plan for a patient with acute right upper quadrant pain. • Describe the diagnostic evaluation and management of a patient with fever, chills, and jaundice. • Define the following: Murphy's sign, Courvoisier's sign, T tube, including purpose and circumstances of use, gallstone ileus. • Contrast carcinomas of the gallbladder, bile duct, and ampulla of Vater with regard to survival and presenting symptoms.
19	<ol style="list-style-type: none"> 1. Acute and chronic pancreatitis 2. Pancreatic tumors 	<ul style="list-style-type: none"> • Classify pancreatitis on the basis of the severity of injury to the organ. • List four etiologies of pancreatitis. • Describe the clinical presentation of a patient with acute pancreatitis, including indications for surgical intervention. • Discuss at least five potential early complications of acute pancreatitis. • Discuss four potential adverse outcomes of chronic pancreatitis as well as surgical diagnostic approach, treatment options, and management. • Discuss the criteria used to predict the prognosis for acute pancreatitis. • Discuss the mechanism of pseudocyst formation with respect to the role of the duct and list five symptoms and physical signs of prognosis. • Describe the diagnostic approach to a patient with a suspected pseudocyst, including indications for and sequence of tests. • Discuss the natural history of an untreated pancreatic pseudocyst as well as the medical and surgical treatment. • List four pancreatic neoplasms and describe the pathology of each with reference to cell type and function. • Describe the symptoms, physical signs, laboratory findings, and diagnostic workup of a pancreatic mass on the basis of the location of the tumor in the pancreas. • Describe the surgical treatment of pancreatic neoplasms. • Discuss the long-term prognosis for pancreatic cancers on the basis of pathology

		and cell type.
20	Hydatid cysts	<ul style="list-style-type: none"> • Discuss the lifecycle of hydatid cyst (hepatic and pulmonary) • List the relevant tests to diagnose hydatid cyst (plain X-Ray, U/S, CT, and serology). • Outline the methods of treatment
21	Skills of physical examination head & neck	<ul style="list-style-type: none"> • Cervical lymph nodes • Thyroid examination • Cystic hygroma • Examination of other neck masses • Carotid artery pulsations and carotid body tumor • Position of trachea
22	Physical examination of the chest	<ul style="list-style-type: none"> • Chest deformity • Chest expansion • Signs of phenol thorax • Signs of pleural effusion • Heart sounds and position of apex beat •
23	Physical examination abdomen and genitalia	<ul style="list-style-type: none"> • Inspection for hernia orifices and cough impulse • Inspection of diversion of the recti • Palpate for hepatomegaly and how to measure liver span • Palpate for splenomegaly • Palpate for kidneys • How to differentiate between spleen and left kidney masses • Examine for ascitis • Palpate for abdominal aorta • Signs of hernia • Inguinal masses • Examination of gentile for haematocele/ testicular masses , epidermal cyst
24	Physical examination lower limbs	<ul style="list-style-type: none"> • Describe shape and deformity • Signs of chronic ischemia • Peripheral pulsations • Examination for foot ulcers • Examination for super facial and deep sensations • Examination for muscle power muscle tone , and reflexes • Examination for amputations (level , stump, joint deformity) • Signs of DVT • Signs of varicose veins
25	Physical examination general	<ul style="list-style-type: none"> • Pulse examination • Blood pressure examination • Signs of anemia • Signs of dehydration • Signs of cyanosis • Signs of jaundice • Level of consciousness
26	Physical examination for post operation patient	<ul style="list-style-type: none"> • Types of skin incisions • Describe colostomy • Describe drains • Describe I.V lines and canulae

NOTE: THE COURSE WILL BE REVISED AND DISTRIBUTED ACCORDINGLY BY THE SURGICAL DEPARTMENT COUNCIL.

IV. Weekly Teaching Activity

Time	Sunday	Monday	Tuesday	Wednesday	Thursday
8:00-9:30 am	Students take a full history and do physical examination				
9:30-12:00 pm	Bedside teaching session, or outpatient clinics or visiting operating theaters				
12:00-13:00 pm	Lunch break				
13:00-15:00 pm	Lectures				

V. Assessment

Exam Format	Weight (%)
OSCE-exam	40%
MCQ exam	40%
Evaluation	20%

VI. Recommended Textbooks:

- Bailey and Love's Short Practice of Surgery by Norman S Williams, Christopher J.K. Bulstrode, and P Ronan O'Connell.
- Textbook of Surgery by Joe Tjandra, Gordon J. A. Clunie, Andrew H. Kaye, and Julian Smith.
- Browse's Introduction to the Symptoms & Signs of Surgical Disease - by Norman L. Browse, John Black, Kevin G. Burnand, and William E. G. Thomas.
- Lecture Notes: Urology by John Blandy and Amir Kaisary Brose signs and symptoms of surgical disease.

VII. Recommended References

- Schwartz's Principles of Surgery, by F. Brunicaudi, Dana Andersen, Timothy Billiar, and David Dunn.
- Sabiston Textbook of Surgery: Sabiston Textbook of Surgery: The Biological Basis of Modern Practicurgical Practice, by Courtney M. Townsend Jr. MD, R. Daniel Beauchamp MD, B. Mark Evers MD, and Kenneth L. Mattox MD



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of General Medicine**

A) Basic Information

1. Course title: GENERAL MEDICINE I
2. Specialty: M.B.B.S. program

3. Department offering the course: Department of General Medicine
4. Academic year: Second semester Fourth year
5. Date of specification approval: Department council date:
6. Internal Evaluator :Prof . Dr. -----
7. Allocated marks: 450 marks.
8. Course duration: 8 weeks of teaching.
9. Course Code: MED412
10. Credit Hours: 9 Credits

B)Professional Information:

A. Course description:

This course introduces general internal medicine principles to the 4th year medical students where students will have exposure to many common medical conditions. It is a shared course among the faculty members of the department and administered at King Abdullah University Hospital, Ministry of Health and Royal Medical Service hospitals.

B. General objectives:

Upon completion of the course, students should be able to:

1. Acquire essential knowledge about common medical diseases affecting various organ systems
2. Take proper clinical history
3. Conduct proper clinical examination
4. Identify physical signs of common medical illnesses
5. Generate a problem list and differential diagnosis for common medical problems
6. Investigate common medical problems in a rationale way
7. Build up proper relations with colleagues, patients, and staff members working in the hospital

C. Methods of Instruction

1. Direct patients contact
2. Bedside clinical teaching
3. Lectures

D. Typical weekly teaching schedule at any hospital

	Patient Contact	Bedside Teaching*	Lectures
Sunday	8:00 – 10:00	10:00 – 12:00	14:00-16:00
Monday	8:00 – 10:00	10:00 – 12:00	14:00-16:00
Tuesday	8:00 – 10:00	10:00 – 12:00	14:00-16:00
Wednesday	8:00 – 10:00	10:00 – 12:00	14:00-16:00
Thursday	8:00 – 10:00	10:00 – 12:00	14:00-16:00

* **Bedside Teaching:** a 2-hour hospital based daily sessions for a small group of students supervised by a faculty member.

E. Specific Objectives

Cardiovascular System

I. Knowledge/Mix of Diseases/Patients

- A. Ischemic heart disease: unstable angina and myocardial infarction
 - B. Heart failure
 - C. Congenital heart disease with onset of manifestations in the adult
 - D. Valvular heart disease—causes
 - E. Clinical diagnosis of rheumatic fever
 - F. Hypertension: essential and secondary
 - G. Pericarditis
 - H. Arrhythmias
1. Distinction between ventricular and supraventricular rhythms
 2. Atrial fibrillation, atrial flutter
 3. Heart block 1^o, 2^o, 3^o
 4. Bundle branch and hemiblocks
 5. Main supraventricular tachycardias

II. History Skills

- A. Obtain history of risk factors for coronary artery disease
- B. Obtain history for rheumatic fever or congenital heart disease
- C. Recognize importance of family history in assessment of cardiovascular disease
- D. Use all modalities in "pain" history to distinguish coronary artery disease from other causes of chest pain
- E. In hypertensive patient, obtain careful history of medication compliance

III. Physical Exam Skills

- A. Determine venous pressure by examination of neck veins
- B. Assess arterial pulses and recognize pulsus alternans, bisferiens pulse, and paradoxical pulse
- C. Perform hepatojugular reflux test to assess venous pressure
- D. On cardiac auscultation, recognize:
 1. Systolic and diastolic murmur--effects of physiologic and pharmacologic interventions
 2. Pericardial friction rub
- E. On cardiac auscultation, recognize:
 1. S-1, S-2, and normal physiologic splitting
 2. S-3, S-4, and how they are best appreciated
 3. Systolic and diastolic murmur--effects of physiologic and pharmacologic interventions
 4. Special characteristics of the murmur of MVP and HCM
 5. Pericardial friction rub

IV. Diagnostic Tests

- A. Recognize a normal ECG and common ECG abnormalities
- B. Recognize a normal Chest X-ray

V. Therapeutic Interventions

- A. Know therapeutic indications for angioplasty and other therapeutic applications of catheterization
- B. Describe therapeutic approach to clinical syndromes described in I.

DISEASES OF THE KIDNEY AND URINARY TRACT

I. Knowledge/Mix of Diseases/Patients

- A. Acute renal failure--The student must distinguish prerenal, renal, and post renal disease using clinical and laboratory parameters
- B. Chronic renal failure and its associated metabolic-endocrine, GI, cardiovascular hematologic, and neuromuscular complications
- C. The major glomerulopathies
- D. Tubulointerstitial disease
- E. Vascular injury

II. History Skills

In the patient who presents with a problem of the urinary tract, the student will determine by history:

- A. Frequency and volume of urine (polyuria, oliguria, anuria)
- B. Urine color, hematuria
- C. Dysuria, diminished stream
- D. Effects of nephrotoxic drugs or drugs that effect bladder emptying or urine color
- E. The clinical syndrome of uremia

III. Physical Exam Skills

- A. Recognize signs of uremia--cognitive, asterixis, odor of breath
- B. Auscultate for bruits
- C. Attempt to palpate for kidneys
- D. Percuss bladder size

IV. Diagnostic Tests

The student should be able to:

- A. Calculate fractional excretion of sodium as a measure of prerenal vs post renal azotemia
- B. Evaluate the patient with glomerulonephritis for multisystem disease
- C. Choose the most appropriate imaging test for the specific patient problem

V. Therapeutic Interventions

The student should be able to:

- A. Manage the patient with acute renal failure and know all indications for dialysis
- B. Recognize the possibility of urinary tract obstruction

DISORDERS OF THE RESPIRATORY SYSTEM

I. Knowledge/Mix of Diseases/Patients

- A. Diseases of airflow limitation
 - 1. Asthma
 - 2. Bronchitis
 - 3. Emphysema
 - 4. Bronchiectasis
 - 5. Cystic fibrosis
- B. Interstitial lung diseases
 - 1. Occupational lung disease
 - 2. Hypersensitivity pneumonias
 - 3. Sarcoidosis
 - 4. Idiopathic pulmonary fibrosis
- C. Infectious lung diseases
 - 1. Community acquired pneumonia
 - 2. Nosocomial pneumonias
 - 3. Tuberculosis
- D. Pulmonary vascular lung diseases
 - 1. Pulmonary thromboembolism
 - 2. Pulmonary hypertension
 - 3. Noncardiogenic pulmonary edema (ARDS)
- E. Neoplastic disease of the lung
 - 1. Bronchogenic carcinoma
 - 2. Paraneoplastic syndromes
- F. Diseases of the pleura
 - 1. Pleural effusion
 - 2. Pneumothorax

II. History Skills

- A. Correctly characterize respiratory symptoms of dyspnea, cough, and expectoration
- B. Obtain careful history of accidental or occupational exposure to potential lung toxins
- C. Obtain a precise history of tobacco use, including passive cigarette smoke
- D. Obtain family history for cystic fibrosis, emphysema, asthma, tuberculosis, collagen vascular diseases, and lung neoplasm
- E. Obtain history of drug exposure and medication use
- F. Determine risk factors for HIV and TB

III. Physical Exam Skills

- A. Examine the chest by inspection
 - 1. Identify abnormal respiratory patterns
 - 2. Recognize findings suggesting pulmonary disease such as deviated trachea, digital clubbing
- B. Examine the chest by palpation
 - 1. Appreciate the significance of supraclavicular adenopathy, crepitation, and tenderness
- C. Examine the chest by percussion
 - 1. Distinguish normal and abnormal resonance
 - 2. Further define areas of dullness by special maneuvers such as vocal and tactile fremitus
- D. Examine the chest by auscultation
 - 1. Recognize normal breath sounds and characterize
 - 2. Recognize adventitious breath sounds such as crackles, rhonchi, and wheezes
 - 3. Understand the diagnostic implications of the adventitious sound

IV. Diagnostic Test Skills

- A. The student should be able to:
 - 1. Interpret arterial blood gases
 - 2. Understand the use of the pulse oximeter
 - 3. Interpret spirometry including Flow-Volume loops
 - 4. Interpret the chemical profile of pleural effusions
- B. The student should understand the indications for:
 - 1. Pulmonary function tests
 - 2. Thoracentesis
 - 3. Pleural biopsy

V. Therapeutic Skills

- A. The student must be familiar with the general management of all diseases listed in I.
- B. The student should be able to:
 - 1. Correctly select antimicrobial agents for respiratory infection
 - 2. Recognize a significant reaction to PPD
 - 3. Know the indications and side effects for the commonly used medications in pulmonary medicine

ENDOCRINOLOGY AND METABOLISM

I. Knowledge/Mix of Diseases/Patients

- A. Diseases of the pituitary
 - 1. Diabetes insipidus
 - 2. Pituitary tumors
 - a. Acromegaly
 - b. Cushing Disease
 - c. Prolactinoma
 - 3. Hypopituitarism
 - 4. Empty Sella Syndrome
- B. Thyroid disease
 - 1. Hypothyroidism causes
 - 2. Hyperthyroidism
 - a. Graves disease
 - b. Toxic multinodular goiter
 - c. Toxic adenoma

- d. Factitious
- 3. Thyroiditis
 - a. Chronic thyroiditis (Hashimoto's)
 - b. Subacute thyroiditis (painful and painless)
- 4. Approach to thyroid nodule
- C. Diseases of the adrenal cortex
 - 1. Cushing Syndrome
 - 2. Hyperaldosteronism
 - 3. Addison's Disease
- D. Pheochromocytoma
- E. Diabetes mellitus
 - 1. Diagnosis
 - 2. Classification and pathogenesis
 - 3. Clinical features
 - 4. Complications
 - 5. Treatment
 - a. Diet
 - b. Insulin
 - c. Oral agents
- F. Hypoglycemia
 - 1. Fasting
 - 2. Reactive
- G. Disorders of the parathyroid gland and of calcium metabolism
- H. Metabolic bone disease
 - 1. Osteoporosis
 - 2. Osteomalacia
 - 3. Paget's
 - 4. Renal osteodystrophy

II. History Skills

- A. Demonstrates knowledge necessary to take a proper history for a patient suspected of having an endocrine or metabolic disorder.
- B. In a patient with diabetes mellitus, the student must obtain and put in chronological order a detailed history of the disease, including all complications, hospitalizations, medications.

III. Physical Exam

- A. Know importance of:
 - 1. Weight
 - 2. Height
 - 3. Skeletal proportions
- B. Recognize exophthalmus and abnormal ocular motility
- C. Evaluate thyroid size, nodularity, tenderness, and bruit
- D. Evaluate skin-temperature, moisture, pigmentation, pretibial myxedema, diabetic dermopathy
- E. Evaluate quality of voice
- F. Evaluate texture and pattern of hair
- G. Recognize diabetic retinopathy

IV. Diagnostic Skills

- A. Understand the use of thyroid function tests
- B. Describe the tests necessary to diagnose diseases listed in I.

V. Therapeutic Interventions

- A. Understand the indications, side effects, and adverse reactions for each of the following:
 - 1. L-thyroxine
 - 2. Glucocorticoids
 - 3. Antithyroid drugs
 - 4. Oral hypoglycemics
 - 5. Insulin (all forms)

GASTROENTEROLOGY

I. Knowledge/Mix of Diseases/Patients

- A. Diseases of the esophagus: anatomic and motor causes of esophagitis (GERD)
- B. H Pylori and PUD
- C. Disorders of absorption
- D. Inflammatory bowel disease
- E. Liver and biliary tract disease
 - 1. Acute and chronic hepatitis
 - 2. Cirrhosis and alcoholic liver disease
 - 3. Approach to patients with abnormal LFTs
- F. Pancreatic diseases
 - 1. Acute pancreatitis
 - 2. Chronic pancreatitis
 - 3. Pancreatic cancer
 - 4. Endocrine tumors

II. History Skills

In obtaining history from a patient with a GI complaint:

- A. Describe all characteristics of abdominal pain
- B. Recognize potential importance of family history and medication history and GI side effects of all drugs
- C. History of diet, weight, food intolerance, bowel pattern, and bleeding
- D. Compare and contrast history of inflammatory bowel disease vs. irritable bowel syndrome
- E. Precise history taking in GERD and dysphagia

III. Physical Exam Skills

A. Students must do complete exam of abdomen and rectal exam including:

- 1. Auscultation for bowel sounds and bruits
- 2. Percussion for liver size
- 3. Palpation for spleen
- B. Recognize need for additional physical exam maneuvers such as:
 - 1. Shifting dullness and fluid wave when ascites is suspected
 - 2. Murphy's sign for right upper quadrant pain or tenderness
 - 3. Eliciting signs of peritonitis
 - 4. Perform rectal digital exam and check for fecal blood

IV. Diagnostic Studies

- A. Know indications for paracentesis
- B. Know indications for placement of nasogastric tube
- C. Properly interpret the following laboratory tests:
 - 1. Serologic studies for viral and autoimmune hepatitis
 - 2. Liver function tests

V. Therapeutic Skills

- A. The student should know indications, side effects, interactions and follow-up for the most commonly used GI medications (e.g. PPIs, Laxatives, Prokinetic agents)

HEMATOLOGY

I. Knowledge/Mix of Diseases/Patients

- A. Pathophysiology of anemia
- B. Anemia of chronic disease
- C. Iron deficiency anemia
- D. Megaloblastic anemia
- E. Hemolytic anemias (congenital and acquired)
- F. Myeloproliferative disorders
- G. Leukemias (acute and chronic)
- H. Lymphoma (Hodgkins, non-Hodgkins and plasma cell myeloma)

- I. Clotting disorders
 - 1. Platelet and vessel wall
 - 2. Coagulation and thrombosis
 - 3. Hypercoagulable state

II. History Skills

- A. Knowing presenting signs of anemia
- B. Recognize that dizziness, shortness of breath, headache, exercise intolerance, and sensitivity to cold may be presenting symptoms of anemia
- C. Recognize that symptoms of angina, claudication, TIA may be unmasked by anemia
- D. Recognize the value of reviewing all previous hematologic lab data in evaluation of hematologic disorders
- E. Recognize symptoms of platelet disorders (spontaneous mucocutaneous bleeding, immediate bleeding with trivial trauma) versus symptoms of clotting-factor deficiency (delayed bleeding, deep muscular hematomas, hemarthroses)
- F. Recognize the importance of "B" symptoms (fever, night-sweats, weight loss) in patients with lymphoma
- G. Recognize the importance of the family history in patients with anemia and coagulation disorders

III. Physical Diagnosis Skills

- A. Recognize ecchymotic or petechial rash
- B. Palpate all lymph node areas, spleen and liver

IV. Diagnostic Skills

- A. Know the value of the following tests in the work-up of a patient with hemolytic anemia:
 - 1. Blood smear review
 - 2. Reticulocyte count
 - 3. Coombs test
 - 4. Serum haptoglobin
 - 5. Glucose 6 phosphate dehydrogenase deficiency
 - 6. Hemoglobin electrophoresis
 - 7. Urine hemosiderin
- B. Know the proper evaluation for bleeding disorder

V. Therapeutic Interventions

- A. Know the appropriate indications for transfusion of erythrocytes and platelets
- B. Know indications for fresh frozen plasma, cryoprecipitate, and purified factor concentrates

INFECTIOUS DISEASES

I. Knowledge/Mix of Diseases/Patients

- A. Clinical syndromes
 - 1. Gram-negative sepsis
 - 2. Infective endocarditis
 - 3. Upper and lower respiratory infections
 - 4. Urinary tract infections
 - 5. Soft tissue infection
 - 6. Tuberculosis
 - 7. Mycoplasma pneumoniae pneumonia
- B. Viral infection
 - 1. Influenza and prevention
 - 2. Herpes infection,
 - 3. Hepatitis A, B and C
- C. Fever of unknown origin

II. History Skills

- A. Demonstrate at bedside ability to elicit history with special attention to relevant travel and residential history, animal contact, work and recreational activity, drug use and sexual history
- B. Elicit any co-existing disease which may be relevant to pathogenesis of infection

III. Physical Examination

- A. Demonstrate ability to perform thorough physical exam in effort to determine source of infection
- B. Recognize skin lesions which may provide diagnostic clues to etiology of infection

- C. Recognize fever patterns and their possible diagnostic indications
- D. Perform Kernig and Brudzinski tests in evaluating for meningitis

IV. Diagnostic Tests

- A. Obtain sputum on patients with pneumonia
- B. Interpret body fluid results (CSF, pleural, peritoneal, joint)

V. Therapeutic Interventions

- A. Choose appropriate antibiotic regimens for most common infections
- B. Know major side effects of antibiotics

RHEUMATOLOGY

I. Knowledge

- A. Clinical manifestations of SLE
- B. Rheumatoid arthritis
- C. Scleroderma
- D. Mixed connective tissue disease
- E. Sjogren's syndrome
- F. Ankylosing spondylitis
- G. Vasculitic syndromes
- H. Sarcoidosis
- I. Osteoarthritis
- J. Psoriatic arthritis and arthritis associated with GI diseases
- K. FMF
- L. Behcet's disease
- M. Gout

II. History Skills

- A. Demonstrate ability to elicit history of multisystem disease. Know importance of extra-articular symptoms such as rash, uveitis, aphthous ulcers, alopecia, pleuritic pain
- B. In patient with joint disease, determine presence or absence of morning stiffness, redness, heat, swelling, restricted movement

III. Physical Exam Skills

- A. Know the physical findings associated with each of the diseases listed in I.
- B. Evaluate each joint for swelling, erythema, tenderness, crepitation, contracture, deformity.
- C. Determine range of motion and compare to normal. Identify Heberden node, Bouchard node, ulnar deviation, Swan neck deformity.
- D. Demonstrate joint effusion.
- E. Examine the spine. Evaluate chest expansion for spondylitis.

IV. Diagnostic Tests

The student should be able to:

- A. Know the basics of diagnostic joint aspiration
- B. Know when to order the following tests: rheumatoid factor, anti DNA, anti SM, anti RNP, anti RO (SSA), anti LA (SSB), ANCA

V. Therapeutic Interventions

- A. Know general treatment options for all diseases listed in I

F. List of lectures and their Objectives

No.	Topic	Objectives
1	Thyroid Disorders	<ol style="list-style-type: none"> 1. Review important points in the anatomy and physiology of the thyroid gland 2. Describe common thyroid diseases causing thyrotoxicosis or hypothyroidism 3. Describe the clinical manifestations of common thyroid diseases 4. Outline the management of common thyroid diseases
2	Diabetes Mellitus (DM)	<ol style="list-style-type: none"> 1. Define DM 2. Classify DM 3. Describe clinical manifestations of DM 4. Define the investigations used to diagnose DM 5. Identify complications of DM 6. Outline the management of DM
3	Adrenal Disorders	<ol style="list-style-type: none"> 1. Review the anatomy and physiology of the adrenal glands 2. Describe the presentation and clinical manifestations of common adrenal gland diseases (Cushing's and Addison's) 3. Suggest a diagnostic approach to common adrenal gland diseases
4	Acute Coronary syndrome and Ischemic Heart Disease (IHD)	<ol style="list-style-type: none"> 1. Describe the presentation of chronic IHD 2. List the causes of IHD 3. Identify the risk factors for atherosclerosis 4. Define the investigations used to diagnose IHD 5. Outline the current management of chronic IHD
5	Arrhythmias	<ol style="list-style-type: none"> 1. Define arrhythmias 2. Describe the mechanisms of arrhythmias 3. Describe the presentation of arrhythmias 4. Define the investigations used to diagnose arrhythmias 5. Outline the treatment of common arrhythmias
8	Rheumatic Fever (RF)	<ol style="list-style-type: none"> 1. Define and discuss RF 2. Define the epidemiology of RF 3. Describe the criteria for diagnosing RF 4. Discuss complications of RF 5. Outline treatment of RF
9	Infective Endocarditis (IE)	<ol style="list-style-type: none"> 1. Define the etiologic factors of IE 2. Discuss clinical manifestations of IE 3. Identify diagnostic methods for IE 4. Describe complications of IE requiring surgical treatment 5. Discuss the lines of treatment for IE
10	Heart Failure (HF)	<ol style="list-style-type: none"> 1. Define and list causes of HF 2. Review the pathophysiology of HF 3. Describe clinical manifestations of HF 4. Suggest appropriate investigations for HF 5. Outline the treatment for HF 6. Point out the prognostic markers and mortality of HF
11	Essential Hypertension	<ol style="list-style-type: none"> 1. Define essential hypertension 2. Mention WHO classification of hypertension 3. Suggest initial investigations for hypertensive patients 4. Identify complications of hypertension 5. Outline the management of hypertension 6. Describe the classes of antihypertensive drugs
12	Liver Cirrhosis	<ol style="list-style-type: none"> 1. Define liver cirrhosis 2. Describe common types of liver cirrhosis 3. Identify the clinical manifestations of liver cirrhosis resulting from both liver cell failure and portal hypertension 4. Outline the management of liver cirrhosis
13	Diseases of the Esophagus	<ol style="list-style-type: none"> 1. Review the anatomy and physiology of the esophagus 2. List common esophageal diseases 3. Describe the pathogenesis of gastroesophageal reflux disease (GERD) 4. Identify the clinical manifestations of GERD 5. Identify the complications of GERD 6. Outline the management of GERD

14	Peptic Ulcer Disease (PUD)	<ol style="list-style-type: none"> 1. Describe the pathogenesis of PUD 2. List the causes of PUD Describe the epidemiology and role of Helicobacter pylori in PUD 3. Identify diagnostic tests of H. pylori infection 4. List complications of PUD and outline their management 5. Identify effective drug regimens for eradication of H. pylori
15	Inflammatory Bowel Disease (IBD)	<ol style="list-style-type: none"> 1. Review the pathogenesis of IBD (ulcerative colitis and Crohn's) 2. Describe the clinical, endoscopic and pathological manifestations of IBD 3. Identify the complications of IBD 4. Outline the management of IBD
16	Investigations in Liver Disease	<ol style="list-style-type: none"> 1. Select appropriate biochemical, serological and imaging studies for various liver diseases 2. List the indications and contraindications of liver biopsy 3. Identify the complications of liver biopsy 4. Describe the pathological features of common liver diseases
18	Viral Hepatitis	<ol style="list-style-type: none"> 1. Outline the epidemiology of viral hepatitis 2. Classify viral hepatitis 3. Describe the manifestations of acute and chronic viral hepatitis 4. Interpret serologic tests to accurately diagnose the specific cause of acute hepatitis 5. Identify the role of liver biopsy in the management of chronic hepatitis 6. Define complications of acute and chronic hepatitis 7. Outline the treatment for viral hepatitis 8. Identify appropriate candidates for vaccination against HAV and HBV
19	Lymphomas	<ol style="list-style-type: none"> 1. Define lymphomas 2. Classify lymphomas 3. Identify the clinical manifestations of lymphomas 4. Arrange appropriate investigations to diagnose lymphoma 5. Provide a staging system for lymphomas 6. Outline the management of lymphomas
21	Disseminated Intravascular Coagulation (DIC) and Thrombotic Thrombocytopenic Purpura (TTP)	<ol style="list-style-type: none"> 1. Define DIC and TTP 2. List the causes of DIC and TTP 3. Define the investigations used to diagnose DIC and TTP 4. Contrast the differences in management in both conditions 5. Identify the indications for platelet transfusion
22	Myeloproliferative disorders	<ol style="list-style-type: none"> 1. Understand the concept of myeloproliferative disorder 2. Identify the different types of myeloproliferative disorders 3. Describe the clinical manifestations of myeloproliferative disorders 4. Arrange appropriate investigations for diagnosing myeloproliferative disorders, with emphasis on cytogenetics and bone marrow examination 5. Outline the management of myeloproliferative disorders
23	Pneumonia	<ol style="list-style-type: none"> 1. Define pneumonia 2. Outline the epidemiology of pneumonia 3. Classify pneumonias 4. Describe the clinical and radiological features of pneumonia 5. Provide a diagnostic approach to pneumonia 6. Identify markers of severity of pneumonia 7. Outline the principles of management of pneumonia
24	Venous Thromboembolism (VTE)	<ol style="list-style-type: none"> 1. List the risk factors for VTE 2. Describe the presentation and clinical features of VTE 3. Provide a diagnostic algorithm for deep venous thrombosis (DVT) and pulmonary embolism 4. Outline the treatment and prophylaxis of VTE
25	Hemoptysis	<ol style="list-style-type: none"> 1. Define hemoptysis 2. List common causes of hemoptysis 3. Suggest a diagnostic approach to patients with hemoptysis 4. Describe the etiology and management of massive hemoptysis
26	Bronchogenic Carcinoma	<ol style="list-style-type: none"> 1. Identify the epidemiology and risk factors for bronchogenic carcinoma 2. Review the pathological classification of bronchogenic carcinoma 3. Describe the clinical manifestations of bronchogenic carcinoma 4. Outline the staging of bronchogenic carcinoma 5. Outline the treatment of bronchogenic carcinoma

27	Chronic Obstructive Pulmonary Disease (COPD)	<ol style="list-style-type: none"> 1. Describe the defining features and epidemiology of COPD 2. Describe the clinical manifestations of COPD 3. Define the investigations used to diagnose COPD 4. Describe the classes of drugs and modes of delivery available in the management of COPD 5. Outline the management of COPD
28	Bronchial Asthma	<ol style="list-style-type: none"> 1. Define bronchial asthma 2. Classify asthma and list triggering factors of asthma 3. Describe clinical features of asthma with emphasis on markers of severity 4. Define the investigations used to diagnose asthma 5. Outline the stepwise approach to management of asthma based on established international guidelines
29	Pulmonary Function Tests (PFTs)	<ol style="list-style-type: none"> 1. Define the various lung volumes and capacities 2. Describe the tests used to identify abnormal lung function 3. List the indications for performing PFTs 4. Summarize the basic characteristic features of obstructive and restrictive ventilatory defects 5. Provide a grading system of severity of ventilatory defects
30	Acid-Base Disorders (ABD)	<ol style="list-style-type: none"> 1. Review the biochemical bases of ABD 2. Discuss metabolic and respiratory ABD 3. Describe the utility of arterial blood gases in ABD 4. Discuss examples of simple and complex ABD
31	Rheumatoid Arthritis (RA)	<ol style="list-style-type: none"> 1. Define RA 2. Describe the pathogenesis of RA 3. Describe the clinical manifestations of RA, articular and extrarticular 4. Identify laboratory investigations used for diagnosing RA and list the diagnostic criteria for RA 5. Suggest a differential diagnosis of RA and conditions simulating RA 6. Outline the management of RA, with emphasis on the classes of drugs used in the treatment of RA and their adverse effects
32	Gout	<ol style="list-style-type: none"> 1. Define gout 2. Describe the epidemiology and pathophysiology of gout 3. Describe the clinical manifestations of gout 4. Suggest a list of differential diagnosis and identify diagnostic methods 5. Outline the management of acute gouty attacks 6. Know the indications for maintenance treatment with allopurinol and other drugs
33	Behcet's Disease	<ol style="list-style-type: none"> 1. Define Behcet's disease 2. Describe the clinical manifestations of Behcet's disease 3. Outline the diagnostic criteria for Behcet's disease 4. Provide a differential diagnosis for oral and genital ulcerations 5. Outline the principles of management of Behcet's disease
34	Familial Mediterranean fever (FMF)	<ol style="list-style-type: none"> 1. Define FMF 2. Describe the clinical manifestations of FMF 3. Outline the diagnostic criteria for FMF 4. Suggest a differential diagnosis for FMF 5. Identify complications of FMF 6. Outline the management of FMF
35	Connective Tissue Diseases (CTD)	<ol style="list-style-type: none"> 1. Define CTD, with emphasis on SLE, scleroderma and polymyositis 2. Describe the clinical features of CTD 3. Identify diagnostic methods for diagnosing CTD, with emphasis on serological profiles 4. Outline the management of CTDs
36	Electrolyte Disturbances	<ol style="list-style-type: none"> 1. Identify the electrolyte composition of different compartments (e.g. intracellular, intravascular, interstitial) 2. Describe the major electrolyte disturbances (Hypo- and hyper kalemia, hypo- and hypernatremia, hypo- and hypercalcemia) 3. Outline principles of management of electrolyte disturbances
37	Acute Renal Failure (ARF)	<ol style="list-style-type: none"> 1. Define ARF 2. List major causes of ARF 3. Discuss how to assess renal function using creatinine clearance and

		<ul style="list-style-type: none"> radiological/ultrasonographic studies 4. List the indications for renal biopsy 5. Discuss briefly lines of management for ARF
38	Chronic renal failure (CRF)	<ul style="list-style-type: none"> 1. Define CRF 2. List causes of CRF 3. Describe the presentation and clinical manifestations of CRF 4. Suggest a diagnostic approach to patients with CRF 5. Outline the treatment of CRF 6. Identify the indications for renal replacement therapy (dialysis and renal transplantation)
39	Nephrotic Syndrome (NS)	<ul style="list-style-type: none"> 1. Define NS 2. List causes of NS 3. Suggest a diagnostic approach to patients with NS 4. Identify the indications and role of renal biopsy in the management of NS 5. List the complications of NS 6. Outline the treatment of NS
40	Secondary Hypertension	<ul style="list-style-type: none"> 1. Recall common causes of secondary hypertension 2. Define the specific features to be included in the history, physical exam, or investigations to suspect secondary hypertension 3. Describe common forms of secondary hypertension, namely: renal artery stenosis, pheochromocytoma and Conn's syndrome 4. Outline the treatment of secondary hypertension
41	Glomerulonephritis (GN)	<ul style="list-style-type: none"> 1. Define GN 2. List causes of GN 3. Identify the clinical manifestations of GN 4. Suggest a diagnostic approach to patients with GN 5. List the indications for renal biopsy and identify common histological patterns of GN 6. Outline the management of GN
42	Hypersensitivity Reactions (HSR)	<ul style="list-style-type: none"> 1. Discuss the 4 mechanisms of HSR 2. List major clinical examples for each type of HSR 3. Explain the principles of management of each type
43	Immunodeficiency Syndromes (IDS)	<ul style="list-style-type: none"> 1. Classify IDS 2. List examples and manifestations of common types of IDS 3. Suggest relevant investigations for evaluation of IDS 4. List different treatment modalities for IDS
44	AIDS	<ul style="list-style-type: none"> 1. Definition 2. Virology, transmission, and prevention 3. AIDS defining illnesses 4. Opportunistic infection in AIDS 5. Management of AIDS
45	OSCE	<ul style="list-style-type: none"> 1. What is OSCE? 2. Describe OSCE exam process 3. Scoring method

G. Typical course lectures schedule

قسم الأمراض الباطنية
جدول محاضرات طلاب طب سنة رابعة

Day	Date	Time	Lecturer	Topic
Sunday		3:00 PM 4:00 PM 4:00 PM-5:00 PM		= Bronchogenic Carcinoma = Bronchiectasis
Monday		3:00 PM 4:00 PM 4:00 PM-5:00 PM		COPD Bronchial Asthma
Tuesday		2:00 PM-3:00 PM 3:00 PM-4:00 PM		= Viral Hepatitis = Autoimmune Hepatitis
Wednesday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Heart Failure = Essential hypertension

Thursday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Arrhythmias = acute coronary syndrom
X		X	X	X
X		X	X	X
Sunday		JCIA		
Monday				
Tuesday				
Wednesday				
Thursday				
X		X	X	X
X		X	X	X
Sunday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= PFTs = Venous Thromboembolism
Monday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= RA & JRA = CTD & SLE
Tuesday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Chronic Leukemia & Lymphoma = TTP & DIC
Wednesday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= PUD = Diseases of the Esophagus
Thursday		3:00 PM-4:00 PM 3:40 PM-5:00 PM		= Diabetes Thyroid Disorders
X		X		X
X		X		X
sunday				
monday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Pneumonia = Hemoptysis
Tuesday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Anemia = Myeloproliferative Disorders
Wednesday		3:00 PM-4:00 PM		= Acid- Base Balance
Thursday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Sleep Apnea TB
X		3:00 PM-4:00 PM		
X		X		X
X		X		X
X		X		X
Sunday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Investigations of Liver Disease = Liver Cirrhosis
Monday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Spondyloarthropathy & Gout = Behcet's disease & FMF
Tuesday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= ARF = CRF
Wednesday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Interstitial Lung Disease = OSCE
Thursday				
X		X		
X		X		X
Sunday				
Monday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		
Tuesday		3:00 PM-4:00 PM		= inflammatory bowel disease
Wednesday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Hypersensitivity Reactions
Thursday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Pituitary Disorders = Adrenal Disorders

X		X		X
X		X		X
Sunday		3:00 PM-4:00 PM		= Infective Endocarditis + Rheumatic fever
Monday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Glomerulonephritis = Nephrotic Syndrome
Tuesday		3:00 PM-4:00 PM		=cardiomyopathy + myocarditis
Wednesday		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Immunodeficiency Syndromes = AIDS
Thursday	24/12/2009	3:00 PM-4:00 PM 4:00 PM-5:00 PM	TBA	= Electrolyte Disturbances = Secondary HTN
		3:00 PM-4:00 PM 4:00 PM-5:00 PM		= Immunodeficiency Syndromes = AIDS

H. Assessment:

1. In-course evaluation: 20 %
2. End of rotation OSCE exam: 40 %
3. Written (MCQ) exam: 40 %

I. Recommended text books and References

1. **Davidson's Principles and Practice of Medicine, 20th Edition With STUDENT CONSULT Online Access.** By Nicholas A. Boon, MA, MD, FRCP(Ed), FESC, Nicki R. Colledge, BSc, FRCP(Ed), Brian R. Walker, BSc, MD, FRCP(Ed) and John A. A. Hunter, OBE, BA, MD, FRCP
2. **Kumar and Clark's Clinical Medicine, 7th Edition - With STUDENT CONSULT Online Access.** By Parveen Kumar, CBE, BSc, MD, FRCP, FRCP(Edin) and Michael L. Clark, MD, FRCP

Macleod's Clinical Examination, 12th Edition With STUDENT CONSULT Access. By Graham Douglas, BSc(Hons), MB, ChB, FRCPE, Fiona Nicol, BSc(Hons), MB, BS, FRCGP, FRCPE and Colin Robertson, BA(Hons), MB, ChB, FRCPE, FRCS(Ed)



21 Sep. University of Medical and Applied sciences
Faculty of medicine
Department of pediatrics

A)Basic Information

- 1. Course title: PAEDIATRICS I**
- 2. Specialty: M.B.B.S. program**
- 3. Department offering the course: Department of Pediatrics**
- 4. Academic year: Second semester Fourth year**
- 5. Date of specification approval: Department council date:**
- 6. Internal Evaluator :Prof . Dr. -----**
- 7. Allocated marks: 450 marks.**
- 8. Course duration: 9 weeks of teaching.**
- 9. Course Code: MED422**
- 10. Credit Hours: 9 Credits**

B)Professional Information:

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

I. GENERAL OBJECTIVES:

By the end of this course, students are expected to:

1. Describe common pediatric diseases
2. Take proper pediatric clinical history, conduct proper physical examination, and detect physical signs of pediatric illnesses
3. Generate a problem list or differential diagnosis for common pediatric problems
4. Investigate common pediatric problems in a rationale way
5. Build up proper relations with colleagues, patients, staff members, nurses, and technicians working in the hospital

II. METHODS OF INSTRUCTIONS:

- Bed- side teaching sessions
- Seminars
- Lectures
- Combined clinical cases discussion

III. EVALUATION AND DISTRIBUTION OF MARKS:

- In- course evaluation = 20%
- Final Clinical Exam = 40%
- Final Written Exam = 40%

IV. RECOMMENDED TEXT BOOKS:

Nelson Textbook of pediatrics
 Forfar Textbook of pediatrics
 Oski Textbook of pediatrics
 Nelson Essential of paediatrics

LEARNING (SPECIFIC) OBJECTIVES OF THE COURSE:

After studying material covered in the lectures, seminars and bed-side sessions of this course, the student is expected to achieve the following specific objectives:

A. Lectures:

No.	Title	Objectives
1 & 2	Haemolytic anaemia 1 & 2	<ol style="list-style-type: none"> 1. Classify types of anaemia 2. list types of haemolytic anaemia 3. Discuss clinical manifestation and diagnostic tests for common haemolytic anaemia 4. Discuss the line of treatment for each type
3 & 4	Bleeding disorder (Coagulation disorders 1 &2)	<ol style="list-style-type: none"> 1. Discuss the mechanisms of homeostasis 2. Provide a diagnostic approach for bleeding disorder 3. List major clinical examples of coagulation defect 4. Outline the principles of management of coagulation defect
5.	Acute leukemia	<ol style="list-style-type: none"> 1. Define acute leukemia 2. Identify the clinical manifestations of acute Leukemia 3. Suggest appropriate investigations for Leukemia & lymphoma with emphasis on histopathological, immunological and cytogenetics classification 4. Identify the prognostic criteria of leukemia 5. Outline the principle management of Leukemia
6.	Acute renal failure (ARF)	<ol style="list-style-type: none"> 1. List major causes of ART 2. Identify the clinical manifestations of ARF 3. Discuss methods of assessment of renal function 4. List the indications for renal biopsy 5. Discuss briefly lines of management for ART
7.	Chronic renal failure (CRF)	<ol style="list-style-type: none"> 1. Define CRF 2. List causes of CRF 3. Describe the presentation and clinical manifestations of CRF 4. Suggest a diagnostic a to patients with CRF 5. Outline the treatment of CRF 6. Identify the indications for renal replacement therapy 1 (dialysis and renal transplantation)
8.	Glomerulonephritis (GN)	<ol style="list-style-type: none"> 1. Define GN 2. List causes of GN 3. Identify the clinical manifestations of GN 4. Suggest a diagnostic approach to patients with GN 5. Identify common histological patterns of GN 6. Outline the management of GN
9.	Nephrotic syndrome (NS)	<ol style="list-style-type: none"> 1. Define NS 2. List causes of NS 3. Suggest a diagnostic approach to patients with NS 4. List the complications of NS 5. Outline the treatment of NS
10.	Acute Gastroenteritis (AGE) & Chronic diarrhea	<ol style="list-style-type: none"> 1. Define AGE and chronic diarrhea 2. List common causes of diarrhea 3. Describe feature of differential types of dehydration 4. Suggest investigation needed in patients with AGE 5. Outline the management of different type of dehydration 6. Provide a diagnostic approach in chronic diarrhea

11.	Malabsorption and Cystic fibrosis	<ol style="list-style-type: none"> 1. Define mal absorption 2. Identify different types of malabsorption. 3. Discuss manifestation and principles of management of malabsorption 4. Define symptoms and signs of CF 5. Provide a diagnostic laboratory investigation of CF 6. Outline complications and principles of therapy
12.	Endemic infectious diseases	<ol style="list-style-type: none"> 1. Identify local endemic infectious diseases. 2. Discuss epidemiology, clinical presentation treatment of salmonellosis and Brucellosis. 3. Explore public health measures to prevent these disease.
13.	Mycobacterial diseases	<ol style="list-style-type: none"> 1. recognize specific microbiologic characters of mycobacteria 2. Identify epidemiology of mycobacterium . tuberculosis around the word and ways of transmission. 3. Describe different clinical presentation & different stages of infection disease in both children and adults. 4. Outline basic principles of management of mycobacterium tuberculosis
14.	HIV infection and immune deficiency/	<ol style="list-style-type: none"> 1. recognize the basic virology concepts of HIV 2. Recognize the epidemiology and mode of transmission of HIV around the word and Jordan. 3. describe clinical presentation and progress of HIV infection 4. Outline concepts of highly active anti-retroviral therapy.
15.	Antibiotics.	<ol style="list-style-type: none"> 1. Recognize general principles of pharmacokinetics and pharmacodynamics of antibiotics 2. Recognize the history of antibiotic evolution. 3. Describe different families of antibiotics 4. Identify mechanisms of action of antibiotics 5. Recognize the importance of appropriate use of antibiotics.
16.	Seizures	<ol style="list-style-type: none"> 1. Recognize the underlying pathology of seizures 2. Provide definition and classification of seizures in different age groups 3. Suggest the diagnostic approach and work up of patients with seizures 4. Outline the basic principle of management of seizures
17.	Meningitis	<ol style="list-style-type: none"> 1. List the pathogens causing acute meningitis in different age groups 2. Describe the pathogenesis of meningitis. 3. Discuss the clinical manifestations in different age group 4. Suggest investigations used to diagnose meningitis. 5. Outline general rules of emergency management of meningitis 6. Discuss common complication of meningitis
18.	Cerebral Palsy (CP)	<ol style="list-style-type: none"> 1. Define CP 2. Describe the epidemiological aspects of CP 3. Recognize different clinical classifications of CP 4. Review the pathogenesis and pathology of CP 5. Discuss aspects of care of patients with CP and their associated morbidities
19.	Febrile Seizures	<ol style="list-style-type: none"> 1. Define and classify febrile seizures 2. Discuss immediate and long term management of febrile seizures 3. Identify the prognosis and long term complications of febrile seizures
20.	Chromosomal abnormalities	<ol style="list-style-type: none"> 1. Identify the common chromosomal abnormalities and their risk factors 2. Describe the common features of trisomy 21 (Down Syndrome) and its major clinical presentation 3. Describe the common features of trisomy 18 and trisomy 13 and other syndromes with chromosomal abnormalities 4. Discuss principles of genetic counseling for chromosomal abnormalities
21.	Inborn error of metabolism	<ol style="list-style-type: none"> 1. Identify clinical presentation of inborn error of metabolism 2. List criteria for newborn screening and its limitation 3. Outline general categories of inborn error of metabolism

		4. Discuss presentation, diagnosis, management and complication of galactosemia and phenylketonuria (PKU)
22.	Hepatitis	<ol style="list-style-type: none"> 1. Define acute and chronic Hepatitis 2. List different causes of hepatitis 3. Describe symptoms, signs and laboratory findings of hepatitis. 4. Discuss the management, prognosis and complication of hepatitis 5. List main causes and laboratory findings of metabolic liver disease
23.	Acyanotic congenital heart disease (ACHD)	<ol style="list-style-type: none"> 1. List types and causes of ACHD 2. Review pathophysiology of low perfusion lesions and left to right shunt ACHD 3. Discuss signs, symptoms, diagnostic tests and treatment of common ACHD
24.	Cyanotic congenital heart disease (CHD)	<ol style="list-style-type: none"> 1. Identify the clinical significance and types of cyanosis 2. List types and causes of CHD 3. Describe signs, symptoms, and diagnostic tests for common CHD 4. Discuss lines of treatment for common CHD

B. SEMINARS:

No.	Title	Objectives
1.	Urinary tract infection (UTI)	<ol style="list-style-type: none"> 1. Define UTI 2. Suggest a diagnostic approach to patients with UTI 3. Outline the treatment of UTI
2.	Water and sodium disturbances	<ol style="list-style-type: none"> 7. Describe major signs and symptoms of water and electrolyte disturbances 8. Describe the role of urine electrolytes & osmolality as well as plasma osmolality in diagnosing water and sodium disturbances 9. Outline the treatment of common water and sodium disturbances
3.	Gastro-esophageal reflux (GER), Abdominal pain	<ol style="list-style-type: none"> 1. Identify different causes of abdominal pain. 2. Discuss symptoms and signs of GER 3. Identify the difference between physiological and pathological GER 4. Suggest investigation needed in patients with abdominal pain and GER 5. Provided differential diagnosis of abdominal pain and principles of management. 6. Outline the principle of therapy of GER
4.	Pneumonias and Bronchiolitis	<ol style="list-style-type: none"> 1. Define pneumonia and bronchiolitis 2. Outline the epidemiology of pneumonia and possible etiologies in DIFFERENT age group 3. Describe the clinical and radiological feature of pneumonia and bronchiolitis 4. Differentiate between upper and lower respiratory tract infection 5. Outline the general role of management for lower respiratory tract infection according to the age and presentation
5.	Upper respiratory tract infection (URTI)	<ol style="list-style-type: none"> 6. Define URTI 7. Outline the epidemiology of URTI and possible etiology in different age group 8. Describe the clinical feature of URTI 9. Outline the general role of management for URTI according to the age and presentation
6.	Exanthemas	<ol style="list-style-type: none"> 1. Identify different types of skin lesions and rash. 2. Identify common childhood exanthema in term of etiology and diagnosis. 3. Discuss ways of spread and prevention program for common exanthemas.
7.	Vasculitis	<ol style="list-style-type: none"> 1. Identify common vasculitis syndromes in children 2. Discuss the clinical feature, prognosis and complication of Kawasaki disease and Henoch-Schonlein purpura (HSP)
8.	Thrombocytopenia and platelets disorders	<ol style="list-style-type: none"> 1. Describe the role of platelets and vessels on homeostasis 2. List the major causes of purpura 3. Discuss clinical manifestation and diagnostic tests for idiopathic thrombocytopenic purpura (ITP) 4. Outline the management of acute and chronic ITP

9.	Nutritional anaemias	<ol style="list-style-type: none"> 1. Review the pathophysiology of common nutritional anemias including vitamin B 12, folic acid, and iron deficiency 2. Identify the clinical manifestations of nutritional anemias 3. Provide relevant laboratory tests to diagnose nutritional anemia 4. Outline the management of nutritional
10.	Bronchial asthma	<ol style="list-style-type: none"> 1. Define bronchial asthma 2. List differential diagnosis of wheezy child 3. Describe clinical presentation of asthma with emphasis on markers of severity 4. Discuss general approach for treatment of Acute exacerbation of asthma 5. List medication used in management of acute and long term asthma
11.	Developmental Assessment	<ol style="list-style-type: none"> 1. Identify the stages of child development and factors affecting it 2. Identify the tools of developmental assessment including Denver developmental Scale. 3. Recognize red flags in developmental assessment
12.	Neural Tube Defects (NTD) Lecture	<ol style="list-style-type: none"> 1. Describe the embryological basis of NTD 2. Identify prenatal diagnosis of NTD 3. Recognize the clinical variations, degrees and associations of NTD 4. Discuss immediate and long term care of patients with NTD
13.	Floppy baby and hypotonia	<ol style="list-style-type: none"> 1. Provide assessment for hypotonia in different age groups 2. Differentiate between hypotonia of central and peripheral origin 3. Identify common causes of hypotonia at each level of the neuronal axis 4. Suggest investigation of a child with hypotonia
14.	Low-birth- weight (LBW) , small and large for gestational age (SGA), (LGA)	<ol style="list-style-type: none"> 1. Define LBW, SGA, and LGA 2. Discuss risk factors for each. 3. Discuss problems & complications of each
15.	Neonatal seizures (NN seizures)	<ol style="list-style-type: none"> 1. Discuss the incidence, etiology and the classification of NN seizures 2. Provide general Approach to newborn infant with seizures. 3. Outline management of NN seizures 4. Discuss prognosis of NN seizures .
16.	Respiratory distress syndrome (RDS), Respiratory disorders of newborns	<ol style="list-style-type: none"> 1. Define respiratory distress syndrome 2. Identify the role of surfactant in different respiratory disease and in improving lung physiology 3. Identify signs of RDS 4. Provide differential diagnosis of RDS 5. Outline Supportive and specifics management of respiratory distress in neonates and pneumonias
17.	Neonatal jaundice (Hyperbilirubinemia)	<ol style="list-style-type: none"> 1. Classify neonatal hyperbilirubinemia (direct and indirect) 2. Review the pathophysiology of neonatal hyperbilirubinemia 3. Define physiological jaundice 4. Name relevant laboratory tests for diagnosis of different type of jaundice with emphasis on ABO/Rh and minor group incompatibility 5. Outline the management steps of neonatal hyperbilirubinemia and its complication
18.	Diabetes mellitus and diabetic keto-acidosis (DKA)	<ol style="list-style-type: none"> 1. Recognize clinical presentation of diabetes mellitus in pediatrics 2. Identify complication of diabetes including DKA and hypoglycemia 3. Provide general approach for fluid and insulin therapy for DKA in children. 4. Discuss counseling and family education of parents with diabetic child
19.	Immunization	<ol style="list-style-type: none"> 1. define immunization both passive and active 2. Discuss national program and WHO program of vaccination 3. list DIFFERENT types of vaccine preparation 4. Identify adverse reaction after vaccination 5. list transient and permanent contraindication of vaccination 6. Discuss special vaccine and its indication
20.	Nutritional disease Failure to thrive (FTT)	<ol style="list-style-type: none"> 1. Recognize normal nutrition pattern 2. Discuss normal caloric and nutritional requirements 3. Identify causes of FTT 4. Provide principles of management of FTT.

21.	Heart Failure in pediatrics (HF)	<ol style="list-style-type: none"> 1. Define HF 2. Discuss the mechanism of HF 3. Describe clinical manifestations of HF according to age 4. Suggest the investigations needed for HF 5. Outline principle of management of HF
22.	Arrhythmia in paediatrics	<ol style="list-style-type: none"> 1. Define arrhythmias 2. Classify arrhythmias in paediatrics 3. Describe the pathophysiology and presentation of arrhythmias 4. Outline the investigation and treatment of arrhythmias
23.	Growth and Puberty	<ol style="list-style-type: none"> 1. Measure the three growth parameter 2. Use the growth centile chart for height, weight and head circumference 3. Identify the average increase in growth (growth velocity) 4. Do pubertal Tanner staging for male and female 5. Define delayed and precocious puberty

C. Bed side teaching:

This is a 4-hour hospital based daily sessions for a small group of students (about 15 students), supervised by a staff member, where the students acquire the following skills:
 Taking appropriate history by taking history from patient himself or from his/her mother directly
 Do assessment of all growth parameter and use the growth percentile chart
 Conducting proper physical examination for patients with various common pediatric problems and in different age group
 Do examination for primitive reflexes and developmental examination in different age group.

Also the students will acquire the skill of taking appropriate neonatal history, conducting proper neonatal physical examination and during their special rotation in neonatal units.

The students are expected to generate a problem list or differential diagnosis for common pediatric and neonatal problems and know how to reach a diagnosis by rationale utilization of laboratory and imaging facilities.

Lecture and seminar 4th year students

Pediatrie Department				
4th Lecture (7/1/2007- 17/3/2007				
		Time 2-3 pm		
2	Sun	Vaccination	Exanthems	
4	Mon.	Approach to sepsis in neonatal	Inborn error of metabolism	
6	Tus.	Pediatrics emergencies/	Fluid therapy	
8	Wen.	Approach to weaknes in childhood.	Cereprel palsy	
10	Thur.	UTI	Hemturea in children	
12	Sun	Cystic fibrosis /	Inheritid hemolytic anemia & Hemoglobinopathy	

14	Mon.	RDS. Meconium aspiration, congenital pneumonia and TTN	Pemature, SGA, LGA	
16	Tus.	Acute hemolytic anemia	Nutritional anemias	
18	Wen.	FUO & Enteric fever & Brucellosis	Immune deficiency diorders, HIV	
20	Thur.	Abdominal Pain	Vomiting & Reflux / GER	
22	Sun	Growth & Puberty/	Azthma /	
24	Mon.	A Cyanotic congenital heart dis	Cyanotic congenital heart dis.	
26	Tus.	Diabetes mellitus & DKA/	Floppy baby and hypotonia/	
28	Wen.	Vasculites, Rh f ever/	Anemia I + II (6th year lecture)	
	Thur	.		
30	Sun	Malabsorption,	Acute G.E Chronic diarrhea	
32	Mon.	Hepatitis A	Hepatitis B	
34	Tus.	Aproach to proteinurea	Renal failure in children	
36	Wen.	Heart Failure in pediatrics/	Leukemia in children	
	Thur.			
37	Sun	Neonatal nutrition & growth/		
39	Mon.			
40	Tus.	Thromocytopenia and platelets/		
42	Wen	Developmental assessment/	Bleeding disorder	
	Thur.			



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Community Medicine**

**Course Name: Community Medicine III
Code: MED 423**

A) Basic Information

1. **Course title:** Community Medicine III
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** Community Medicine Department
4. **Academic year:** second semester of third year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:** Prof. Dr. -----
7. **Allocated marks:** 150 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	2 credit hrs=30 hrs
2- Practical	0.5 credit hrs=15 hrs

B) Professional Information:

1- Overall Aim of the Course: this course aims to:

- Provide the undergraduate with educational experience necessary for further practice in field of public health through providing:
- Basic scientific knowledge essential to practice medicine at the primary level of health, dealing with health problems commonly met-with in clinical practice with proper awareness of the social and community context of healthcare.
- Basic knowledge of epidemiology of the diseases.

2- Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

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

- 2.1.1. **Identify** the Principle & the organization of the Egyptian healthcare system.
- 2.1.2. **Mention** the importance of Population-based approaches to healthcare services to improve medical practice.
- 2.1.3. **Describe** the basic issues for health & safety for the patients & themselves during undergraduate training and post-graduate practice..

2.2. Practical and Clinical Skills

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

- 2.2.1 **Examine** the environment for any health hazards.

2.2.2 **Write** a report about any field visit.

2.2.3 **Establish** a strategy for prevention and control of any health problem.

2.2.4 **Conduct** counseling sessions for prevention & control of different conditions for healthy individuals, for patients as well as their families.

2.3. Communication skills:

By the end of the program the graduate will be able to:

2.3.1. **Demonstrate** Respect for college's right & involve them in care takers in management decisions.

2.3.2. **Demonstrate** Respect to all colleges irrespective of their socioeconomic level, culture

2.3.3. **Demonstrate** Respect for right researches' and involve them and/or their in management decisions.

2.3.4 **Respect** the role and the contributions of other health care professionals regardless their degrees or rank (top management, subordinate or colleague).

2.4. Intellectual Skills:

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

2.4.1. **Combine** the clinical and investigational database to be efficient in clinical problem solving.

2.4.2. **Analyze** all sources of information in addition to the patient interview to Interpret and evaluate the medical history. Such sources include family or friends, medical records and other health care professionals, to overcome limitations regarding information.

2.4.3. **Adopt** the questioning approach to own work & that of others to solve clinical problems.

2.4.4. **Formulate** a research hypothesis & questions.

2.4.5. **Analyze and interpret** medical data precisely.

2.5. General and transferable Skills:

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

2.5.1 **Establish** life-long self-learning required for continuous professional development.

2.5.2 **Use** the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

2.5.3 **Retrieve**, manage, and manipulate information by all means, including electronic means.

2.5.4 **Present** information clearly in written, electronic and oral forms.

2.5.5 **Establish** effective interpersonal relationship to Communicate ideas and arguments.

4- **Coursecontents:**

Subject	Lectures (hrs)	rounds (hrs)	Total (hrs)
<p>1- ADMINISTRATION:-</p> <ul style="list-style-type: none"> <input type="checkbox"/> Planning, Organization, Supervision, Controlling & Evaluation <input type="checkbox"/> Hospital administration <input type="checkbox"/> Quality of healthcare 	5	-	5
<ul style="list-style-type: none"> <input type="checkbox"/> Primary healthcare 			
<p>2-NUTRITION:-</p> <ul style="list-style-type: none"> <input type="checkbox"/> Basic nutrition (CHO, Fat, Protein, Vitamins, minerals & dietary fibers) <input type="checkbox"/> Nutritional disorders (PEM, Iron Deficiency anaemia, rickets, osteoporosis, dental caries, iodine deficiency, vitamin A deficiency & obesity) <input type="checkbox"/> Therapeutic nutrition <input type="checkbox"/> Nutritional assessment <input type="checkbox"/> Food balance sheet 	5	3	8
<p>4-MENTAL HEALTH:-</p> <ul style="list-style-type: none"> <input type="checkbox"/> Definition <input type="checkbox"/> Mental health problems in developing countries <input type="checkbox"/> Etiology of mental disorders <input type="checkbox"/> Prevention & control 	2	-	2
<p>5-ENVIRONMENTAL HEALTH:-</p> <ul style="list-style-type: none"> <input type="checkbox"/> Definition of environment <input type="checkbox"/> Air sanitation & air pollution <input type="checkbox"/> Water sanitation <input type="checkbox"/> Swimming pools <input type="checkbox"/> Food sanitation <input type="checkbox"/> Food additives <input type="checkbox"/> Waste disposal <input type="checkbox"/> Disaster management 	2	3	5
<p>6- OCCUPATIONAL:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Occupational health <input type="checkbox"/> Occupational diseases (Occupational bronchial asthma, byssinosis, extrinsic allergic alveolitis, pneumoconiosis) <input type="checkbox"/> Physical health hazards (heat, noise, vibration, radiation & pressure) 	2	4	6

disorders) <input type="checkbox"/> Occupational health & safety program prevention & control technology)			
7-Introduction to safety	2	-	2
8-HEALTH SERVICES:- <input type="checkbox"/> Reproductive health <input type="checkbox"/> Maternal health <input type="checkbox"/> Child health <input type="checkbox"/> School health <input type="checkbox"/> Adolescent health <input type="checkbox"/> Rural health <input type="checkbox"/> Geriatric health	12	5	17
Total	30	15	45

4- Teaching and learning methods:

METHODS USED:

- 1- Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- 2- Lectures and/or handouts - are not to replace the main source of information that is the textbook.
- 3- Labs are group activities where:
 - Group discussions are very much encouraged and field visit.

TEACHING PLAN:

Lectures: 30 lectures

Small classes: 15 practical classes

Time plan:

Item	Time schedule	Teaching hours
Lectures	2 times/week/15 weeks (2 C. hours/week)	30 hours
Practical classes	1 times/week/ 15 week (0.5 C. hours/week)	15 hours
Total	2.5 C. hours /week/15 week	45 hours

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1 st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) WeightingSystem:

Examination	Marksallocated
3- Finalexam:	
a- Written	100
b- Practical	25
Total	125

5-D) Examinationdescription:

Examination	Description
Finalexam: a- Written	<input type="checkbox"/> select(MCQs), Shortessay, cases, complete, crossmatching

6- Listofreferences:

6.1- Basicmaterials:

6.2- Essentialbooks(textbooks):

6.3- Recommendedbooks:

MaxcyRL, 2008: Publichealthandpreventive medicine

6.4- Periodicals, Web

<http://www.Winhttp://www.pubmed.co>

[m,http://sciencedirect.com](http://sciencedirect.com).

Internationaljournalof epidemiology

7- FACILITIESUSED FOR TEACHING AND LEARNING:

Facilities which will be used for teaching this course include:

- Lecture hall
- Data show
- Smartboard
- Educational videos
- Posters

Course coordinator: Prof. Dr./

Head of Department: Prof. Dr./



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Gynecology & Obstetrics

A)Basic Information

- 1. Course title: OBSTETRICS AND GYNAECOLOGY I**
- 2. Specialty: M.B.B.S. program**
- 3. Department offering the course: Department of Gynecology & Obstetrics**
- 4. Academic year: First semester Fifth year**
- 5. Date of specification approval: Department council date:**
- 6. Internal Evaluator :Prof . Dr. -----**
- 7. Allocated marks: 450 marks.**
- 8. Course duration: 8 weeks of teaching.**
- 9. Course Code: MED422**
- 10. Credit Hours: 9 Credits**

B)Professional Information:

Obstetrics and Gynecology (9 Credits hours, 8 weeks)

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

1. METHODS OF INSTRUCTIONS:

- Bed- side teaching sessions
- Seminars
- Lectures
- Clinical skill lab

2. Bed side Teaching:

This is a 3-hour hospital based daily sessions for a small group of students (about 10-12 students), supervised by a staff member, where the students acquire the following skills:

- Taking appropriate history from patients
- Conducting proper physical examination for patients with various common obstetrics and gynaecology problems
- The students are expected to generate a problem list or differential diagnosis for common obstetrics and gynaecology and know how to reach a diagnosis by rationale utilization of laboratory and imaging facilities.

The students rotate between King Abdullah university hospital, governmental hospitals and military hospital.

3. Clinical skill Lab

There are 10 sessions per rotation divided as one session/day for 2 weeks, repeated for each subgroup of students. The students are expected to:

- practice obstetric examination on models (3 sessions)
- Have demonstration for the mechanism of labour and partogram (2 sessions)
- Observe Vaginal examination and smear taking (one session)
- Observe Fetal monitoring in labour
- Discuss preoperative and postoperative care

General objectives

By the end of this course, students are expected to:

1. Describe common obstetrics and gynaecology diseases
2. Take proper obstetrics and gynaecology clinical history, conduct proper physical examination, and detect physical signs of obstetrics and gynaecology illnesses
3. Generate a problem list or differential diagnosis for common obstetrics and gynaecology problems
4. Investigate common obstetrics and gynaecology problems in a rationale way
5. Build up proper relations with colleagues, patients, staff members, nurses, and technicians working in the hospital

Specific objectives

Lectures

	Lecture	Objective
1	Ectopic pregnancy	to understand <ul style="list-style-type: none"> - the pathology of ectopic pregnancy - symptoms and signs and diagnosis of ectopic pregnancy - basic principles of management
2	D. M & pregnancy	to understand <ul style="list-style-type: none"> - effect of pregnancy on DM and effect of DM on pregnant patient and fetus - principles of screening for DM during pregnancy - principles of care of diabetic mothers during pregnancy, labour and after delivery
3	Infertility Management	to understand <ul style="list-style-type: none"> - definitions of infertility and types - basic investigations for infertile couple - basic management of infertile couple
4	Rh- Isoimmunization	to understand <ul style="list-style-type: none"> - the pathophysiology of disease - effects of the disease on course of pregnancy and outcome - basic management of the condition
5	Antenatal Care	to understand <ul style="list-style-type: none"> - aims of antenatal care - patterns of antenatal care - principles of antenatal care
6	Dysfunctional uterine bleeding	to understand <ul style="list-style-type: none"> - the pathophysiology of disease - basic investigation for women with abnormal uterine bleeding - basic medical and surgical treatment options
7	Hypertensive Disorders in Pregnancy	to understand <ul style="list-style-type: none"> - classifications of the disease - pathophysiology of preeclampsia - effect of preeclampsia on pregnancy and complication of the disease - principles of management of preeclampsia and its complications
8	Endometriosis	to understand <ul style="list-style-type: none"> - pathophysiology of the disease - symptoms and signs of the disease - effect of the disease - principles of various surgical and medical treatment
9	Antepartum hemorrhage (APH)	to understand <ul style="list-style-type: none"> - definition and causes of APH - complications of the disease - principles of management of this condition
10	Pelvic inflammatory disease (PID)	to understand <ul style="list-style-type: none"> - pathophysiology of the disease - symptoms and signs of the disease - effect of the disease

		<ul style="list-style-type: none"> - principles of various surgical and medical treatment
11	Abortion and miscarriage	<p>to understand</p> <ul style="list-style-type: none"> - definition and types of abortions - symptoms and signs of various types of abortion - principles of management of this condition
12	Genital prolapse	<p>to understand</p> <ul style="list-style-type: none"> - pathophysiology and classification of genital prolapse - symptoms and signs of the condition - principles of surgical and medical treatment
13	Uterine fibroids	<p>to understand</p> <ul style="list-style-type: none"> - pathophysiology of the disease - symptoms and signs of the condition - principles of various surgical and medical treatment - options
14	Menopause & HRT	<p>to understand</p> <ul style="list-style-type: none"> - pathophysiology of the disease - symptoms and complications of menopause - principles of management of this condition - types and complications of HRT
15	Anemia in pregnancy	<p>to understand</p> <ul style="list-style-type: none"> - hematological changes during pregnancy - causes of anemia in pregnancy - effect of anemia on the mother and fetus - basic investigations and management of anemia during pregnancy
16	Preterm labour & PROM	<p>to understand</p> <ul style="list-style-type: none"> - definition and cause of preterm labour and PROM - complication of preterm labour and PROM - symptoms and signs of this condition - principles of diagnosis and management
17	Multiple Pregnancy	<p>to understand</p> <ul style="list-style-type: none"> - types and etiology of multiple pregnancy - diagnosis of multiple pregnancy - complications of this pregnancy - basic principles of management of multiple pregnancy during pregnancy and delivery
18	Amenorrhea	<p>to understand</p> <ul style="list-style-type: none"> - definitions of amenorrhea and types - etiology of this condition - basic investigations for this condition - basic principles of management of this condition -
19	Endometrial cancer	<p>to understand</p> <ul style="list-style-type: none"> - epidemiology of this type of cancer - classifications of this cancer - symptoms and signs of this disease - basic principles of investigations and treatment

20	Ovarian tumors	to understand <ul style="list-style-type: none"> - epidemiology of this type of tumors, benign and malignant - classifications of this condition - symptoms and signs of these tumors - basic principles of investigations and treatment
21	Gestational trophoblastic disease (GTD)	to understand <ul style="list-style-type: none"> - epidemiology of this condition - classifications of this condition - symptoms and signs of molar pregnancy and its complications - basic principles of investigations and treatment
22	Carcinoma of cervix	to understand <ul style="list-style-type: none"> - epidemiology of this condition - classifications of preinvasive and invasive cervical disease - principles of cervical cancer screening - symptoms and signs of cervical cancer - basic principles of investigations and treatment

Self study : 1) physiological changes in pregnancy

2) physiology of menstruation

Seminars:

	Seminars	Objective
1	Mechanism of Labour	to understand <ul style="list-style-type: none"> - anatomy and types of female pelvis - definition of various terms used in labour - basic mechanisms of labour in cephalic presentations
2	Puerperium	to understand <ul style="list-style-type: none"> - definition of puerperium - physiological changes during puerperium - basic principles of management of various complications during this period
3	Assessment of Fetal Growth Pattern	to understand <ul style="list-style-type: none"> - definitions of normal and abnormal fetal growth - determinants of fetal growth - basic principles of different methods used in fetal growth assessment
4	Normal Labour	to understand <ul style="list-style-type: none"> - definition and stages of normal vaginal delivery - principles of management in each stage of labour - basic principles of drugs used during normal labour
5	Prolonged Pregnancy & Induction of Labour	to understand <ul style="list-style-type: none"> - definition and etiology of prolonged pregnancy - principles of assessment of patient with prolonged pregnancy - principles of different methods of induction of labour - complications of prolonged pregnancy and induction of labour
6	Mal- presentations	to understand <ul style="list-style-type: none"> - definition and types of malpresentations - principles of diagnosis and management of various malpresentation during labour
7	Family Planning and Contraception	to understand <ul style="list-style-type: none"> - mechanism of conception and pregnancy - classifications of family planning methods - indications and complications of each method - approach to patients seeking family planning

8	Postpartum hemorrhage (PPH)	to understand <ul style="list-style-type: none"> - definition and types of PPH - etiology of PPH - principles of management of primary and secondary PPH - Complications of PPH
9	Vaginal discharge&STD	to understand <ul style="list-style-type: none"> - causes and types of abnormal vaginal discharge - basic principles of diagnosis and treatment of patients with abnormal vaginal discharge and sexually transmitted diseases
10	Coagulation Disorders in Pregnancy	to understand <ul style="list-style-type: none"> - pathophysiology of this condition - etiology of this condition - principles of diagnosis and management of this disorder
11	Drugs in Pregnancy	to understand <ul style="list-style-type: none"> - classification of drugs used in pregnancy - complications of common drugs used in pregnancy - how to safely use drugs in pregnancy
12	Medical Disorders in Pregnancy	to understand <ul style="list-style-type: none"> - effect of pregnancy on common medical problems - effect of common medical problems in pregnancy - basic principles of care of pregnant women with medical disorders including multidisciplinary care
13	Urinary problems in pregnancy	to understand <ul style="list-style-type: none"> - pathophysiological changes of urinary system during pregnancy - epidemiology of urinary tract infections in pregnancy - symptoms and signs and management of UTI during pregnancy - basic principles of management of pregnant women with chronic urinary problems
14	Analgesia and Anesthesia in Obstetrics	to understand <ul style="list-style-type: none"> - pathophysiology of pain during labour - basic principles of different types of analgesia and anesthesia in each stage of labour - complications of various methods of analgesia on the mother and her baby

**Weekly Teaching activities including lecture, laboratory , interactive case , seminars etc
WEEK (I)**

Day	9 - 11	11.30 – 12.30	1.00 – 2.00
Sunday	History taking	Lecture	Lecture
Monday	Obstetric Examination	Lecture	Lecture
Tuesday	Case presentation	Lecture	Lecture
Wednesday	Case presentation	Lecture	Lecture
Thursday	Case presentation	Lecture	Lecture

WEEK(2 -8) typical

	SUNDAY	Monday	TUE	wed	THURSDAY
8-9	Skill lab session	Skill lab session	Skill lab session	Skill lab session	Skill lab session
9-10	Round	round	round	round	round
10-11	Bed side Teaching	Bed side Teaching	Bed side Teaching	Bed side Teaching	Bed side Teaching

11-12	Bed side Teaching	Bed side Teaching	Bed side Teaching	Bed side Teaching	Bed side Teaching
12.30-2	Seminar	Seminar	Seminar	Seminar	Seminar

Assessment: I listed the format for the organ system, Please make necessary adjustments to fit your course

	EXAM FORMAT	WEIGHT (%)
FIRST EXAM (end of rotation)	OSCE format	40%
In course evaluation	Faculty members	20%
FINAL EXAM	MCQ	40%

Recommended text book:

Author	publisher	Title
Hacker, Moore, GAMB	W B Saunders	Essentials Of Obstetrics And Gynecology
Campbell, Monga	Hodder Arnold	Gynecology By Ten Teachers
Campell, lees	Hodder Arnold	Obstetrics By Ten Teachers

Suggested readings

Websites related to obstetrics and gynaecology



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Community Medicine**

**Course Name: BIOSTATISTICS
Code: MED 512**

A) Basic Information

1. **Course title:** BIOSTATISTICS
2. **Specialty:** M.B.B.S. program
3. **Department offering the course:** Community Medicine Department
4. **Academic year:** First semester of Fifth year
5. **Date of specification approval:** Department council date:
6. **Internal Evaluator:** Prof. Dr. -----
7. **Allocated marks:** 150 marks.
8. **Course duration:** 15 weeks of teaching.

1- Theoretical	2 credit hrs=30 hrs
2- Practical	0.5 credit hrs=15 hrs

B) Professional Information:

1- Overall Aim of the Course: this course aims to:

- Accept the undergraduate students with Basic knowledge essential for conducting scientific research

2- Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

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

- 2.1.1. **Describe** the principles of epidemiology and the epidemiological methods (research methodology)
- 2.1.2. **Mention** the basic principles governing population studies (demography)

2.2. Practical and Clinical Skills

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

- 2.2.1 **Perform** simple statistical procedures

2.3. Professional Attitude and Behavioral skills:

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

- 23.1. **Demonstrate** Respect for patients' rights and involve them and/or their care takers in management decisions.
- 2.3.2. **Demonstrate** respect to all patients irrespective of their socioeconomic levels, culture or religious beliefs using appropriate language to establish a good patient-physician relationship.
- 2.3.3. **Respect** the role and the contributions of other health care professionals regardless of their degrees or rank (top management, subordinate or colleague).
- 2.3.4. **Reflect** critically on their own performance and that of others, to refer patients to appropriate health facility at the appropriate stage.

2.4. Communication skills:

By the end of the program the graduate will be able to:

- 2.4.1. **Communicate** clearly, sensitively and effectively with patients and their relatives, and colleagues from a variety of health and social care professions.
- 2.4.2. **Establish** good relations with other health care professionals regardless of their degrees or rank.
- 2.4.3. **Communicate** effectively with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.
- 2.4.4. **Cope up** with difficult situations as breaking news.
- 2.4.5. **Respect** patients and their relatives, superiors, colleagues and all members of the health profession.
- 2.4.6. **Respond** to changes in work environment.
- 2.4.7. **Establish** Evidence Based Medicine in management decisions.

2.5. Intellectual Skills:

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

- 2.5.1. **Combine** the clinical and investigational database to be efficient in clinical problem solving.
- 2.5.2. **Analyze** all sources of information in addition to the patient interview to Interpret and evaluate the medical history. Such sources include family or friends, medical records and other health care professionals, to overcome limitations regarding information.
- 2.5.3. **Adopt** the questioning approach to own work & that of others to solve clinical problems.
- 2.5.4. **Formulate** a research hypothesis & questions

2.6. General and transferable Skills:

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

- 2.6.1 **Establish** life-long self-learning required for continuous professional development.
- 2.6.2 **Use** the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.
- 2.6.3 **Retrieve**, manage, and manipulate information by all means, including electronic means.
- 2.6.4 **Present** information clearly in written, electronic and oral forms.
- 2.6.5 **Establish** effective interpersonal relationship to Communicate ideas and arguments.

3-Course contents:

Subject	Lectures (hrs)	rounds (hrs)	Total (hrs)
3-MEDICAL STATISTICS:- <input type="checkbox"/> Types of data & presentation of data <input type="checkbox"/> Research methodology & ethical issues of research <input type="checkbox"/> Statistical methods of data collection (sampling, screening, Survey, epidemiological studies) <input type="checkbox"/> Measures of central tendency & dispersion <input type="checkbox"/> Vital rates	30	15	45
Total	30	15	45

4-Teaching and learning methods:

METHODS USED:

- 1- Lectures - are interactive sessions to have a General overview of the objectives and discuss certain areas.
- 2- Lectures and/or handouts - are not to replace the main source of information that is the textbook.
- 3- Labs are group activities where:
 - Group discussions are very much encouraged and field visit.

TEACHING PLAN:

Lectures: 30 lectures

Small classes: 15 practical classes

Time plan:

Item	Time schedule	Teaching hours
Lectures	2 times/week/15 weeks (2 C. hours/week)	30 hours
Practical classes	1 times/week/ 15 week (0.5 C. hours/week)	15 hours
Total	2.5 C. hours /week/15 week	45 hours

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA:

- The student is expected to attend all classes and lab sessions.
- Repeated tardiness and leaving labs prior to dismissal is a set -up for failure.
- Absence in excess of 10% is defined as unsatisfactory progress and will be reported to the Dean's office.

5-B) Assessment Tools:

Exam	Day	Date
1 st	To be announced	Week 8
Practical	According to the group	Week 15
Final- Theory	To be decided by Registry office.	

5-C) Weighting System:

Examination	Marks allocated
3- Finalexam:	
a- Written	100
b- Practical	25
Total	125

5-D) Examination description:

Examination	Description
Finalexam: a- Written	<input type="checkbox"/> select(MCQs), Short essay, cases, complete, crossmatching

6- List of references:

6.1- Basic materials:

6.2- Essential books (textbooks):

6.3- Recommended books:

Maxcy RL, 2008: Public health and preventive medicine

6.4- Periodicals, Web

<http://www.Winhttp://w>

www.pubmed.com, <http://>

sciencedirect.com.

International journal of epidemiology

7- FACILITIES USED FOR TEACHING AND LEARNING:

Facilities which will be used for teaching this course include:

- Lecture hall
- Data show
- Smartboard
- Educational videos
- Posters

Course coordinator: Prof. Dr./

Head of Department: Prof. Dr./



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine – Dept of Neuroscience
Division of Psychiatry**

A)Basic Information

1. **Course title: Psychiatry**
2. **Specialty: M.B.B.S. program**
3. **Department offering the course: Faculty of Medicine – Dept of Neuroscience**
4. **Academic year: First semester Fifth year**
5. **Date of specification approval: Department council date:**
6. **Internal Evaluator :Prof . Dr. -----**
7. **Allocated marks: 200 marks.**
8. **Course duration: 4 weeks of teaching.**
9. **Course Code: MED422**
10. **Credit Hours: 4.5 Credits**

B)Professional Information:

General Objectives:

By the end of this course, students are expected to:

1. be able to perform psychiatric assessment
2. know the principles of psychiatric diagnosis
3. recognize the key signs and symptoms in psychiatry
4. be able to make tentative diagnoses of the most common psychiatric disorders
5. understand the treatment armamentarium of the most common psychiatric disorders

Methods of instructions:

1. lectures
2. Seminars
3. Clerking

Evaluation and Distribution of Marks:

- Attendance: 10
- Clinical Examination: 40
- Final Written : 50

Recommended Textbooks:

1. DSM-IVTM: Diagnostic and Statistical Manual of Mental Disorders, (4th ed). American Psychiatric Association, 1994.
2. Stoudemire, A: Clinical Psychiatry for Medical Students, (2nd ed). J.B. Lippincott Company, 1999
3. Gelder, M., Gath, D., Mayou, R: Concise Oxford Textbook of Psychiatry. Oxford Press, 2000.

Lectures / Seminars

1. PSYCHIATRIC HISTORY, PHYSICAL, AND THE MENTAL STATUS EXAMINATION

The student will be able to:

1. elicit and clearly record a complete psychiatric history, including the identifying data, chief complaint, history of the present illness, past psychiatric history; medications (psychiatric and nonpsychiatric), general medical history, review of systems, substance abuse history, family history, and personal and social history;
2. recognize the importance of, and be able to obtain and evaluate, historical data from multiple sources (family members, community mental health resources, old records, etc.);
3. discuss the effect of developmental issues on the assessment of patients;
4. elicit, describe, and precisely record the components of the mental status examination, including general appearance and behavior, motor activity speech, affect, mood, thought processes, thought content, perception, sensorium and cognition (e.g., state of consciousness, orientation, registration, recent and remote memory, calculations, capacity to read and write, abstraction), judgment, and insight;
5. use appropriate terms associated with the mental status examination;
6. for each category of the mental status exam, list common abnormalities and their common causes;
7. make a clear and concise case presentation;
8. assess and record mental status changes, and alter hypotheses and management in response to these changes;
9. recognize physical signs and symptoms that accompany classic psychiatric disorders (e.g., tachycardia and hyperventilation in panic disorder);
10. appreciate the implications of the high rates of general medical illness in psychiatric patients, and state reasons why it is important to diagnose and treat these illnesses;
11. assess for the presence of general medical illness in psychiatric patients, and determine the extent to which a general medical illness contributes to a patient's psychiatric problem; and
12. recognize and identify the effects of psychotropic medication in the physical examination.

2. DIAGNOSIS, CLASSIFICATION, AND TREATMENT PLANNING

Using his or her knowledge of psychopathology, diagnostic criteria, and epidemiology, the student will:

1. discuss the advantages and limitations of using a diagnostic system like the DSM-IV;
2. use the DSM-IV in identifying specific signs and symptoms that compose a syndrome or disorder;
3. use the five axes of the DSM-IV in evaluating patients;
4. state the typical signs and symptoms of the common psychiatric disorders, such as major depression, anxiety disorders, bipolar disorder, dementia, delirium, schizophrenia, personality disorders, and substance use disorders;
5. formulate a differential diagnosis for major presenting problems;
6. formulate a plan for evaluation,
7. assess changes in clinical status and alter hypotheses and management in response to changes;
8. develop an individualized treatment plan for each patient; and
9. discuss the prevalence and barriers to recognition of psychiatric illnesses in general medical settings, including variations in presentation.

3. INTERVIEWING SKILLS

The student will:

1. explain the value of skillful interviewing for patient and doctor satisfaction and for obtaining optimal clinical outcomes;
2. demonstrate respect, empathy, responsiveness, and concern regardless of the patient's problems or personal characteristics;
3. identify his or her emotional responses to patients;
4. identify strengths and weaknesses in his or her interviewing skills;
5. discuss the prior perceptions (Objectives 3 and 4) with a colleague or supervisor to improve interviewing skill;
6. identify verbal and nonverbal expressions of affect in a patient's responses, and apply this information in assessing and treating the patient;

7. state and use basic strategies for interviewing disorganized, cognitively impaired, hostile/resistant, mistrustful, circumstantial/hyperverbal, unspontaneous/hypoverbal and potentially assaultive patients;
8. demonstrate the following interviewing skills: appropriate initiation of the interview; establishing rapport; the appropriate use of open-ended and closed questions; techniques for asking "difficult" questions; the appropriate use of facilitation, empathy, clarification, confrontation, reassurance, silence, summary statements; soliciting and acknowledging expression of the patient's ideas, concerns, questions, and feelings about the illness and its treatment; communicating information to patients in a clear fashion; appropriate closure of the interview;
9. state and avoid the following common mistakes in interviewing technique: interrupting the patient unnecessarily; asking long, complex questions; using jargon; asking questions in a manner suggesting the desired answer; asking questions in an interrogatory manner; ignoring patient verbal or nonverbal cues; making sudden inappropriate changes in topic; indicating patronizing or judgmental attitudes by verbal or nonverbal cues (e.g., calling an adult patient by his or her first name, questioning in an oversimplified manner, etc.); incomplete questioning about important topics; and
10. demonstrate sensitivity to student-patient similarities and differences in gender, ethnic background, sexual orientation, socioeconomic status, educational level, political views, and personality traits.

4. PSYCHIATRIC EMERGENCIES

The student will:

1. identify the clinical and demographic factors associated with a statistically increased risk of suicide in general and clinical populations;
2. develop a differential diagnosis, conduct a clinical assessment, and recommend management for a patient exhibiting suicidal thoughts or behavior;
3. recognize the clinical findings that might suggest a general medical cause for neuropsychiatric symptoms, such as hallucinations, delusions, confusion, altered consciousness, and violent behavior;
4. discuss the clinical features, differential diagnosis, and evaluation of delirium, including emergent conditions;
5. recognize the typical signs and symptoms of common psychopharmacologic emergencies (e.g., lithium toxicity, neuroleptic malignant syndrome, anticholinergic delirium, monoamine oxidase inhibitor-related hypertensive crisis) and discuss treatment strategies;
6. recognize signs and symptoms of potential assaultiveness;
7. Develop a differential diagnosis, conduct a clinical assessment, and state the principles of management of a person with potential or active violent behavior;
8. discuss classes, indications, and associated risks of medications used for management of acutely psychotic, agitated, and combative patients;
9. discuss the nonpharmacologic components of management of acute psychosis, agitation, and combativeness;
10. identify the indications, precautions, and proper use of restraints;
11. state the prevalence, morbidity, mortality, and risk factors associated with adult domestic violence in clinical and nonclinical populations;
12. discuss the physician's role in screening, diagnosing, managing, documenting, reporting, and referring victims of child abuse, adult domestic violence, and elder abuse;
13. list the psychiatric problems that are frequently seen in battered women and child abuse victims;
14. outline the emergency management of a rape victim;
15. discuss the indications for psychiatric hospitalization, including the presenting problem and its acuity, risk of danger to patient or others, community resources, and family support;
16. identify the problems associated with the use of the terms "medical clearance" and "psychiatric clearance";
17. discuss the clinical and administrative aspects of the transfer of a patient to another facility; and
18. summarize the process of admission to a psychiatric hospital, specifically a) the implications of voluntary vs. involuntary commitment status, b) the principles of civil commitment, and c) the process of obtaining a voluntary or involuntary commitment and the role of the physician in obtaining it.

5. Delirium, Dementia, and Amnestic and Other Cognitive Disorders

The student will:

1. recognize the cognitive, psychological, and behavioral manifestations of brain disease of known etiology, anatomy, or pathophysiology;
2. compare, contrast, and give examples of the following: delirium, dementia (including treatable dementia), dementia syndrome of depression (pseudodementia), cortical dementia, and subcortical dementia;
3. discuss the clinical features, differential diagnosis, and evaluation of delirium, including emergent conditions;
4. state the prevalence of delirium in hospitalized elderly patients;
5. discuss the behavioral and pharmacologic treatments of delirious patients;
6. discuss the epidemiology, differential diagnosis, clinical features, and course of Alzheimer's disease, vascular dementia, substance-induced persisting dementia, Parkinson's disease, and HIV encephalopathy;
7. list the treatable causes of dementia and summarize their clinical manifestations;
8. summarize the medical evaluation and clinical management of a patient with dementia;
9. discuss the diagnosis, differential diagnosis, and treatment of amnesic disorder that is due to general medical conditions (e.g., head trauma) and substance-induced conditions (e.g., Korsakoff's syndrome that is due to thiamine deficiency);
10. employ a cognitive screening evaluation to assess and follow patients with cognitive impairment, and state the limitations of these instruments;
11. state the neuropsychiatric manifestations of HW-related illnesses; and
12. state the neuropsychiatric manifestations of seizure disorders, strokes, and head injuries.

6. SUBSTANCE-RELATED DISORDERS

The student will:

1. obtain a thorough history of a patient's substance use through empathic, nonjudgmental and systematic interviewing;
2. list and compare the characteristic clinical features (including denial) of substance abuse and dependence;
3. discuss the epidemiology (including the effects of gender), clinical features, patterns of usage, course of illness, and treatment of substance use disorders (including anabolic steroids);
4. identify typical presentations of substance abuse in general medical practice;
5. list the psychiatric disorders that share significant comorbidity with substance-related disorders and discuss some criteria for determining whether the comorbid disorder should be treated independently;
6. discuss the role of the family, support groups, and rehabilitation programs in the recovery of patients with substance use disorders;
7. list the questions that compose the CAGF (test for alcoholism) questionnaire and discuss its use as a screening instrument;
8. discuss the genetic, neurobiological, and psychosocial explanations of the etiology of alcoholism;
9. list the psychiatric and psychosocial complications of alcoholism;
10. know the clinical features of intoxication with, and withdrawal from: cocaine, amphetamines, hallucinogens, cannabis, phencyclidine, barbiturates, opiates, caffeine, nicotine, benzodiazepines, and alcohol;
11. state the treatments of intoxication and withdrawal induced by the substances just listed;
12. list patient characteristics associated with benzodiazepine abuse;
13. state guidelines for prescribing benzodiazepines; and
14. discuss the difficulties experienced by health care personnel in providing empathic, nonjudgmental care to substance abusers.

7. Schizophrenia And Other Psychotic Disorders

The student will:

1. define the term psychosis;
2. develop a differential diagnosis for a person presenting with psychosis, including identifying historical and clinical features that assist in the differentiation of general medical, substance-induced, affective, schizophrenic, and other causes;
3. state the neurobiologic, genetic, and environmental theories of etiology and pathophysiology of schizophrenia;
4. summarize the epidemiology, clinical features, course, and complications of schizophrenia;
5. name the clinical features of schizophrenia that are associated with good and poor outcome, and explain the significance of negative symptoms;
6. summarize the treatment of schizophrenia, including both pharmacologic and psychosocial interventions; and

7. list the features that differentiate delusional disorder, schizophreniform disorder, schizoaffective disorder, and brief psychotic disorder from each other and from schizophrenia.

8. MOOD DISORDERS

The student will:

1. discuss evidence for neurobiological, genetic, psychological, and environmental etiologies of mood disorders;
2. state the epidemiologic features, prevalence rates, and lifetime risks of mood disorders in clinical and nonclinical populations;
3. compare and contrast the epidemiologic and clinical features of unipolar depression and bipolar disorders;
4. state the common signs and symptoms, differential diagnosis (including general medical and substance-induced disorders), course of illness, comorbidity, prognosis, and complications of mood disorders;
5. contrast normal mood variations, states of demoralization, and bereavement with the pathological mood changes that constitute depressive illness;
6. identify the difference in the presentation, treatment, and prognosis of major depression with and without melancholic features, psychotic features, atypical features, catatonic features, seasonal pattern, and postpartum onset;
7. compare and contrast the clinical presentations of mood disorders in children, adults, and the elderly;
8. describe some common presentations of depressive disorders in nonpsychiatric settings, define the term "masked depression," and develop an approach to evaluating and treating mood disorders in a general medical practice;
9. discuss the increased prevalence of major depression in patients with general medical-surgical illness (e.g., myocardial infarction, diabetes, cardiovascular or cerebrovascular accidents, hip fractures) and the impact of depression on morbidity and mortality from their illnesses;
10. discuss the identification and management of suicide risk in general medical settings;
11. outline the recommended acute and maintenance treatments for dysthymia, major depression, and bipolar disorders (manic and depressive phases); and
12. state the characteristics and techniques of the nonpharmacological treatments for depression, including psychotherapy, cognitive therapy, couples therapy, and phototherapy

9. Anxiety Disorders

The student will:

1. summarize neurobiological, psychological, environmental, and genetic etiologic hypotheses for the anxiety disorders;
2. discuss the epidemiology, clinical features, course, and psychiatric comorbidity of panic disorder, agoraphobia, social phobia, specific phobias, generalized anxiety disorder, posttraumatic stress disorder, acute stress disorder, and obsessive-compulsive disorder;
3. distinguish panic attack from panic disorder;
4. list the common general medical and substance-induced causes of anxiety, and assess for these causes in evaluating a person with an anxiety disorder;
5. outline psychotherapeutic and pharmacologic treatments for each of the anxiety disorders;
6. compare and contrast clinical presentations of anxiety disorders in children and adults; and
7. discuss the role of anxiety and anxiety disorders in the presentation of general medical symptoms, the decision to visit a physician, and health care expenditures.

10. Somatoform And Factitious Disorders

The student will:

1. state the clinical characteristics of somatization disorder, conversion disorder, pain disorder, body dysmorphic disorder, and hypochondriasis;
2. list the psychiatric disorders that have high comorbidity with somatoform disorders;
3. discuss the implications of the high rate of underlying general medical/neurologic illness in patients diagnosed with pain disorder and conversion disorder;
4. list the characteristic features of factitious disorder and malingering, and compare these with the somatoform disorders;
5. discuss the frequency and importance of physical symptoms as manifestations of psychological distress;
6. summarize the principles of management of patients with somatoform disorders; and
7. discuss difficulties physicians may have with patients with these diagnoses.

11. Dissociative And Amnestic Disorders

The student will:

1. list a differential diagnosis of psychiatric, substance-induced, and general medical conditions that may present with amnesia and discuss the evaluation and treatment of persons with amnesia;
2. state the clinical features of dissociative amnesia, dissociative fugue, depersonalization disorder, and dissociative identity disorder;
3. discuss the hypothesized role of psychological trauma, including sexual, physical, and emotional abuse, in the development of dissociative disorders (and posttraumatic stress disorders);
4. discuss the etiologic hypotheses, epidemiology, clinical features, course, and treatment of dissociative identity disorder; and
5. state the indications for an amobarbital interview and for hypnosis.

12. Eating Disorders

The student will:

1. summarize the etiologic hypotheses, clinical features, epidemiology, course, comorbid disorders, complications, and treatment for anorexia nervosa;
2. summarize the etiologic hypotheses, clinical features, epidemiology, course, comorbid disorders, complications, and treatment for bulimia;
3. discuss the role of the primary care physician in the prevention and early identification of eating disorders; and
4. list the medical complications and indications for hospitalization in patients with eating disorders.

13. Sexual Dysfunctions And Paraphilias

The student will:

1. discuss the anatomy and physiology of the male and female sexual response cycles;
2. obtain a patient's sexual history, including an assessment of risk for sexually transmitted diseases, especially HIV;
3. state the implications of the high prevalence of sexual dysfunctions in the general population, particularly in the medically ill;
4. list the common causes of sexual dysfunctions, including general medical and substance-related etiologies;
5. summarize the manifestations, differential diagnosis, and treatment of hypoactive sexual desire disorder and sexual aversion disorder; male erectile disorder and female sexual arousal disorder; female and male orgasmic disorders and premature ejaculation; and dyspareunia and vaginismus;
6. define the term paraphilia;
7. list and define each of the common paraphilias;
8. review the management of the paraphilias; and discuss the prevalence, manifestations, diagnosis, and treatment of gender identity disorder.

14. Sleep Disorders The student will:

1. describe normal sleep physiology, including sleep architecture, throughout the life cycle;
2. obtain a complete sleep history;
3. discuss the manifestations, differential diagnosis, evaluation, and treatment of primary sleep disorders, including dyssomnias and parasomnias;
4. describe typical sleep disturbances that accompany psychiatric and substance use disorders;
5. summarize the effect(s) of psychotropic medications on sleep; and
6. describe sleep hygiene treatment.

15. Personality Disorders

The student will:

1. explain how the DSM-IV defines personality traits and disorders, and identify features common to all personality disorders;
2. list the three descriptive groupings (clusters) of personality disorders in the DSM-IV and describe the typical traits of each personality disorder;
3. summarize the neurobiological, genetic, developmental, behavioral, and sociological theories of the etiology of personality disorders, including the association of childhood abuse and trauma;

4. discuss the biogenetic relationships that exist between certain Axis I and Axis II disorders (e.g., schizotypal personality disorder and schizophrenia);
5. discuss the epidemiology, differential diagnosis, course of illness, prognosis, and comorbid psychiatric disorders in patients with personality disorders;
6. list the general medical and Axis I psychiatric disorders that may present with personality changes;
7. identify difficulties in diagnosing personality disorders in the presence of stress, substance abuse, and other Axis I disorders;
8. discuss the concepts of hierarchical levels of defense and regression under stress, and list typical defense mechanisms used in various personality disorders;
9. list the psychotherapeutic and pharmacologic treatment strategies for patients with personality disorders;
10. discuss the management of patients with personality disorders in the general medical setting; and
11. summarize principles of management of patients with personality disorders, including being aware of one's own response to the patient, soliciting consultations from colleagues when indicated, and using both support and nonpunitive limit setting.

16. Child And Adolescent Psychiatry

The student will:

1. compare and contrast the process of psychiatric evaluation of children and adolescents at different developmental stages with that of adults;
2. state the value of obtaining data from families, teachers, and other nonphysicians in the evaluation and treatment of children and adolescents;
3. state the indications for psychological assessment in children and list some of the common tests in a psychometric evaluation;
4. list a differential diagnosis and outline the evaluation of academic performance and behavioral problems in children;
5. summarize the etiologic hypotheses, clinical features, epidemiology, pathophysiology, course, comorbid disorders, complications, and treatment for attention-deficit hyperactivity disorder and conduct disorder;
6. discuss the etiologies, epidemiology, clinical features, and psychiatric comorbidity of mental retardation;
7. name the major clinical features of autism;
8. differentiate developmentally based anxiety (e.g., stranger, separation anxiety) from pathological anxiety disorders in childhood;
9. describe typical clinical features of anxiety disorders at different developmental stages;
10. compare and contrast the clinical features of mood disorders in children with that of adults;
11. discuss the epidemiology and clinical features of suicide risk in adolescents;
12. state when and how a physician must protect the safety of a child who may be the victim of physical or sexual abuse or neglect; and
13. identify signs and symptoms of child sexual and physical abuse, and discuss its short- and long-term psychiatric sequelae.

17. Geriatric Psychiatry

The student will:

1. employ a cognitive screening evaluation to assess and follow patients with cognitive impairment, and state the limitations of these instruments;
2. compare and contrast the clinical presentation of depression in elderly patients with that of younger adults;
3. summarize the special considerations in prescribing psychotropic medications for the elderly;
4. appreciate that multiple medications can cause cognitive, behavioral, and affective problems in the elderly;
5. compare, contrast, and give examples of the following: delirium, dementia (including treatable dementia), dementia syndrome of depression (pseudodementia) subcortical and cortical dementia;
6. state the prevalence of delirium in hospitalized elderly patients;
7. discuss the differential diagnosis, etiological hypotheses, epidemiology, clinical features, and course of Alzheimer's disease, vascular dementia, and Parkinson's disease;
8. summarize the assessment and treatment of a patient with dementia;
9. discuss the physician's role in diagnosing, managing, and reporting elderly victims of physical or sexual abuse; and
10. discuss the role of losses in the etiology of psychiatric disorders in the elderly.

18. Psychopharmacology

Anxiolytics

The student will discuss:

1. the indications, mechanism of action, pharmacokinetics, common side effects, signs of toxicity, and drug interactions of the different benzodiazepines and sedative-hypnotics;
2. the consequences of abrupt discontinuation;
3. patient characteristics associated with benzodiazepine abuse;
4. guidelines for prescribing benzodiazepines; and
5. the differences (mechanism of action, onset of effect, and indications) between buspirone and benzodiazepines.

Antidepressants

The student will summarize:

1. indications, mechanisms of action, pharmacokinetics, common or serious side effects (including overdose potential), signs of toxicity, and drug interactions of tricyclics, second generation (atypical) antidepressants, monoamine oxidase inhibitors, and selective serotonin reuptake inhibitors;
2. the pretreatment assessment and strategies of antidepressant use, including ensuring adequacy of trial and blood level monitoring;
3. the effect of antidepressants on the cardiac conduction system and electrocardiogram;
4. dietary and pharmacologic restrictions in prescribing a monoamine oxidase inhibitor; and
5. advantages of selective serotonin reuptake inhibitors.

Antipsychotics (neuroleptics)

The student will discuss:

1. the indications, mechanisms of action, pharmacokinetics, common or serious side effects, signs of toxicity, and drug interactions of antipsychotics;
2. differences between high-potency and low-potency antipsychotics, including the side effects common to each group;
3. diagnosis and management of extrapyramidal side effects including acute dystonia, parkinsonism, akathisia, tardive dyskinesia, and neuroleptic malignant syndrome; and
4. the indications and special considerations in using clozapine and risperidone.

Mood Stabilizers

The student will discuss:

1. the indications, mechanism of action, pharmacokinetics side effects, signs of toxicity (neurological gastrointestinal, renal, endocrine, cardiac), and drug interactions of lithium;
2. the pretreatment assessment and strategies of use of lithium, including blood level monitoring; and
3. the indications, mechanisms of action, pharmacokinetics, common and serious side effects, toxicity, drug interactions, and plasma level monitoring for carbamazepine, valproic acid, and calcium channel blockers.

Anticholinergics

The student will discuss:

1. the indications, mechanisms of action, pharmacokinetics, common and serious side effects, signs of toxicity, and drug interactions of anti-parkinsonian agents;
2. which antidepressants and antipsychotics have a higher incidence of anticholinergic side effects;
3. special considerations in prescribing these medications in the elderly; and
4. the high prevalence of anticholinergics in over-the-counter medications.

Electroconvulsive Therapy (ECT)

The student will summarize:

1. indications, physiologic effects, and side effects of ECT;
2. clinical situations in which ECT may be the treatment of choice;
3. pretreatment assessment, including conditions requiring special precautions; and
4. the medical care of the patient before, during, and after ECT treatment.

Other Topics

The student will discuss:

1. the use of beta blockers in psychiatry and
2. the indications for and side effects of stimulants.

19. Psychotherapies

The student will:

1. state the characteristics and techniques of, and common indications and contraindications for, psychodynamic psychotherapy, psychoanalysis, supportive psychotherapy, cognitive and behavioral therapies, group therapies, couples and family therapy, and psychoeducational interventions;
2. describe behavioral medicine interventions (e.g., relaxation training, assertiveness training, contingency management, stimulus control, relapse prevention, biofeedback) and know for which medical problems they are effective (e.g., smoking cessation) and ineffective;
3. define and begin to recognize transference, countertransference, and commonly used defense mechanisms; discuss the concepts of hierarchical levels of defense and regression under stress; and list some typical defense mechanisms used in various personality disorders;
4. state the major findings of studies of the efficacy of psychosocial interventions in the treatment of psychiatric and general medical disorders and in reducing health care costs; and
5. discuss techniques for increasing the likelihood of successful referral for psychotherapy.

<p>1. PSYCHIATRIC ASSESSMENT</p>	<p>The student will be able to:</p> <ol style="list-style-type: none"> 1. elicit and clearly record a complete psychiatric history, including the identifying data, chief complaint, history of the present illness, past psychiatric history; medications (psychiatric and nonpsychiatric), general medical history, review of systems, substance abuse history, family history, and personal and social history; 2. recognize the importance of, and be able to obtain and evaluate, historical data from multiple sources (family members, community mental health resources, old records, etc.); 3. discuss the effect of developmental issues on the assessment of patients; 4. elicit, describe, and precisely record the components of the mental status examination, including general appearance and behavior, motor activity speech, affect, mood, thought processes, thought content, perception, sensorium and cognition (e.g., state of consciousness, orientation, registration, recent and remote memory, calculations, capacity to read and write, abstraction), judgment, and insight; 5. use appropriate terms associated with the mental status examination; 6. for each category of the mental status exam, list common abnormalities and their common causes; 7. make a clear and concise case presentation; 8. assess and record mental status changes, and alter hypotheses and management in response to these changes; 9. recognize physical signs and symptoms that accompany classic psychiatric disorders (e.g., tachycardia and hyperventilation in panic disorder); 10. appreciate the implications of the high rates of general medical illness in psychiatric patients, and state reasons why it is important to diagnose and treat these illnesses; 11. assess for the presence of general medical illness in psychiatric patients, and determine the extent to which a general medical illness contributes to a patient's psychiatric problem; and 12. recognize and identify the effects of psychotropic medication in the physical examination.
<p>2. DIAGNOSIS, CLASSIFICATION, AND TREATMENT PLANNING</p>	<p>Using his or her knowledge of psychopathology, diagnostic criteria, and epidemiology, the student will:</p> <ol style="list-style-type: none"> 1. discuss the advantages and limitations of using a diagnostic system like

	<p>the DSM-IV;</p> <ol style="list-style-type: none"> 2. use the DSM-IV in identifying specific signs and symptoms that compose a syndrome or disorder; 3. use the five axes of the DSM-IV in evaluating patients; 4. state the typical signs and symptoms of the common psychiatric disorders, such as major depression, anxiety disorders, bipolar disorder, dementia, delirium, schizophrenia, personality disorders, and substance use disorders; 5. formulate a differential diagnosis for major presenting problems; 6. formulate a plan for evaluation, 7. assess changes in clinical status and alter hypotheses and management in response to changes; 8. develop an individualized treatment plan for each patient; and 9. discuss the prevalence and barriers to recognition of psychiatric illnesses in general medical settings, including variations in presentation.
<p>3. INTERVIEWING SKILLS</p>	<p>The student will:</p> <ol style="list-style-type: none"> 1. explain the value of skillful interviewing for patient and doctor satisfaction and for obtaining optimal clinical outcomes; 2. demonstrate respect, empathy, responsiveness, and concern regardless of the patient's problems or personal characteristics; 3. identify his or her emotional responses to patients; 4. identify strengths and weaknesses in his or her interviewing skills; 5. discuss the prior perceptions (Objectives 3 and 4) with a colleague or supervisor to improve interviewing skill; 6. identify verbal and nonverbal expressions of affect in a patient's responses, and apply this information in assessing and treating the patient; 7. state and use basic strategies for interviewing disorganized, cognitively impaired, hostile/resistant, mistrustful, circumstantial/hyperverbal, unspontaneous/hypoverbal and potentially assaultive patients; 8. demonstrate the following interviewing skills: appropriate initiation of the interview; establishing rapport; the appropriate use of open-ended and closed questions; techniques for asking "difficult" questions; the appropriate use of facilitation, empathy, clarification, confrontation, reassurance, silence, summary statements; soliciting and acknowledging expression of the patient's ideas, concerns, questions, and feelings about the illness and its treatment; communicating information to patients in a clear fashion; appropriate closure of the interview; 9. state and avoid the following common mistakes in interviewing technique: interrupting the patient unnecessarily; asking long, complex questions; using jargon; asking questions in a manner suggesting the desired answer; asking questions in an interrogatory manner; ignoring patient verbal or nonverbal cues; making sudden inappropriate changes in topic; indicating patronizing or judgmental attitudes by verbal or nonverbal cues (e.g., calling an adult patient by his or her first name, questioning in an oversimplified manner, etc.); incomplete questioning about important topics; and 10. demonstrate sensitivity to student-patient similarities and differences in gender, ethnic background, sexual orientation, socioeconomic status, educational level, political views, and personality traits.
<p>4. PSYCHIATRIC EMERGENCIES</p>	<p>The student will:</p> <ol style="list-style-type: none"> 1. identify the clinical and demographic factors associated with a statistically increased risk of suicide in general and clinical populations; 2. develop a differential diagnosis, conduct a clinical assessment, and recommend management for a patient exhibiting suicidal thoughts or behavior; 3. recognize the clinical findings that might suggest a general medical

	<p>cause for neuropsychiatric symptoms, such as hallucinations, delusions, confusion, altered consciousness, and violent behavior;</p> <ol style="list-style-type: none"> 4. discuss the clinical features, differential diagnosis, and evaluation of delirium, including emergent conditions; 5. recognize the typical signs and symptoms of common psychopharmacologic emergencies (e.g., lithium toxicity, neuroleptic malignant syndrome, anticholinergic delirium, monoamine oxidase inhibitor-related hypertensive crisis) and discuss treatment strategies; 6. recognize signs and symptoms of potential assaultiveness; 7. develop a differential diagnosis, conduct a clinical assessment, and state the principles of management of a person with potential or active violent behavior; 8. discuss classes, indications, and associated risks of medications used for management of acutely psychotic, agitated, and combative patients; 9. discuss the nonpharmacologic components of management of acute psychosis, agitation, and combativeness; 10. identify the indications, precautions, and proper use of restraints; 11. state the prevalence, morbidity, mortality, and risk factors associated with adult domestic violence in clinical and nonclinical populations; 12. discuss the physician's role in screening, diagnosing, managing, documenting, reporting, and referring victims of child abuse, adult domestic violence, and elder abuse; 13. list the psychiatric problems that are frequently seen in battered women and child abuse victims; 14. outline the emergency management of a rape victim; 15. discuss the indications for psychiatric hospitalization, including the presenting problem and its acuity, risk of danger to patient or others, community resources, and family support;
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<p>5. DELIRIUM, DEMENTIA, AND AMNESTIC AND OTHER COGNITIVE DISORDERS</p>	<p>The student will:</p> <ol style="list-style-type: none"> 1. recognize the cognitive, psychological, and behavioral manifestations of brain disease of known etiology, anatomy, or pathophysiology; 2. compare, contrast, and give examples of the following: delirium, dementia (including treatable dementia), dementia syndrome of depression (pseudodementia), cortical dementia, and subcortical dementia; 3. discuss the clinical features, differential diagnosis, and evaluation of delirium, including emergent conditions; 4. state the prevalence of delirium in hospitalized elderly patients; 5. discuss the behavioral and pharmacologic treatments of delirious patients; 6. discuss the epidemiology, differential diagnosis, clinical features, and course of Alzheimer's disease, vascular dementia, substance-induced persisting dementia, Parkinson's disease, and HIV encephalopathy; 7. list the treatable causes of dementia and summarize their clinical manifestations; 8. summarize the medical evaluation and clinical management of a patient with dementia; 9. discuss the diagnosis, differential diagnosis, and treatment of amnesic disorder that is due to general medical conditions (e.g., head trauma) and substance-induced conditions (e.g., Korsakoff's syndrome that is due to thiamine deficiency); 10. employ a cognitive screening evaluation to assess and follow patients with cognitive impairment, and state the limitations of these instruments; 11. state the neuropsychiatric manifestations of HW-related illnesses; and 12. state the neuropsychiatric manifestations of seizure disorders, strokes,
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	and head injuries.
6. SUBSTANCE-RELATED DISORDERS	<p>The student will:</p> <ol style="list-style-type: none"> 1. obtain a thorough history of a patient's substance use through empathic, nonjudgmental and systematic interviewing; 2. list and compare the characteristic clinical features (including denial) of substance abuse and dependence; 3. discuss the epidemiology (including the effects of gender), clinical features, patterns of usage, course of illness, and treatment of substance use disorders (including anabolic steroids); 4. identify typical presentations of substance abuse in general medical practice; 5. list the psychiatric disorders that share significant comorbidity with substance-related disorders and discuss some criteria for determining whether the comorbid disorder should be treated independently; 6. discuss the role of the family, support groups, and rehabilitation programs in the recovery of patients with substance use disorders; 7. list the questions that compose the CAGF (test for alcoholism) questionnaire and discuss its use as a screening instrument; 8. discuss the genetic, neurobiological, and psychosocial explanations of the etiology of alcoholism; 9. list the psychiatric and psychosocial complications of alcoholism; 10. know the clinical features of intoxication with, and withdrawal from: cocaine, amphetamines, hallucinogens, cannabis, phencyclidine, barbiturates, opiates, caffeine, nicotine, benzodiazepines, and alcohol; 11. state the treatments of intoxication and withdrawal induced by the substances just listed; 12. list patient characteristics associated with benzodiazepine abuse; 13. state guidelines for prescribing benzodiazepines; and 14. discuss the difficulties experienced by health care personnel in providing empathic, nonjudgmental care to substance abusers
7. SCHIZOPHRENIA AND OTHER PSYCHOTIC DISORDERS	<p>The student will:</p> <ol style="list-style-type: none"> 1. define the term psychosis; 2. develop a differential diagnosis for a person presenting with psychosis, including identifying historical and clinical features that assist in the differentiation of general medical, substance~ induced, affective, schizophrenic, and other causes; 3. state the neurobiologic, genetic, and environmental theories of etiology and pathophysiology of schizophrenia; 4. summarize the epidemiology, clinical features, course, and complications of schizophrenia; 5. name the clinical features of schizophrenia that are associated with good and poor outcome, and explain the significance of negative symptoms; 6. summarize the treatment of schizophrenia, including both pharmacologic and psychosocial interventions; and 7. list the features that differentiate delusional disorder, schizophreniform disorder, schizoaffective disorder, and brief psychotic disorder from each other and from schizophrenia.
8. MOOD DISORDERS	<p>The student will:</p> <ol style="list-style-type: none"> 1. discuss evidence for neurobiological, genetic, psychological, and environmental etiologies of mood disorders; 2. state the epidemiologic features, prevalence rates, and lifetime risks of mood disorders in clinical and nonclinical populations; 3. compare and contrast the epidemiologic and clinical features of unipolar depression and bipolar disorders; 4. state the common signs and symptoms, differential diagnosis (including general medical and substance-induced disorders), course of illness, comorbidity, prognosis, and complications of mood disorders;

	<ol style="list-style-type: none"> 5. contrast normal mood variations, states of demoralization, and bereavement with the pathological mood changes that constitute depressive illness; 6. identify the difference in the presentation, treatment, and prognosis of major depression with and without melancholic features, psychotic features, atypical features, catatonic features, seasonal pattern, and postpartum onset; 7. compare and contrast the clinical presentations of mood disorders in children, adults, and the elderly; 8. describe some common presentations of depressive disorders in nonpsychiatric settings, define the term "masked depression," and develop an approach to evaluating and treating mood disorders in a general medical practice; 9. discuss the increased prevalence of major depression in patients with general medical-surgical illness (e.g., myocardial infarction, diabetes, cardiovascular or cerebrovascular accidents, hip fractures) and the impact of depression on morbidity and mortality from their illnesses; 10. discuss the identification and management of suicide risk in general medical settings; 11. outline the recommended acute and maintenance treatments for dysthymia, major depression, and bipolar disorders (manic and depressive phases); and 12. state the characteristics and techniques of the nonpharmacological treatments for depression, including psychotherapy, cognitive therapy, couples therapy, and phototherapy
<p>9. ANXIETY DISORDERS</p>	<p>The student will:</p> <ol style="list-style-type: none"> 1. summarize neurobiological, psychological, environmental, and genetic etiologic hypotheses for the anxiety disorders; 2. discuss the epidemiology, clinical features, course, and psychiatric comorbidity of panic disorder, agoraphobia, social phobia, specific phobias, generalized anxiety disorder, posttraumatic stress disorder, acute stress disorder, and obsessive-compulsive disorder; 3. distinguish panic attack from panic disorder; 4. list the common general medical and substance-induced causes of anxiety, and assess for these causes in evaluating a person with an anxiety disorder; 5. outline psychotherapeutic and pharmacologic treatments for each of the anxiety disorders; 6. compare and contrast clinical presentations of anxiety disorders in children and adults; and 7. discuss the role of anxiety and anxiety disorders in the presentation of general medical symptoms, the decision to visit a physician, and health care expenditures.
<p>10. SOMATOFORM AND FACTITIOUS DISORDERS</p>	<p>The student will:</p> <ol style="list-style-type: none"> 1. list a differential diagnosis of psychiatric, substance-induced, and general medical conditions that may present with amnesia and discuss the evaluation and treatment of persons with amnesia; 2. state the clinical features of dissociative amnesia, dissociative fugue, depersonalization disorder, and dissociative identity disorder; 3. discuss the hypothesized role of psychological trauma, including sexual, physical, and emotional abuse, in the development of dissociative disorders (and posttraumatic stress disorders); 4. discuss the etiologic hypotheses, epidemiology, clinical features, course, and treatment of dissociative identity disorder; and 5. state the indications for an amobarbital interview and for hypnosis.
<p>11. DISSOCIATIVE AND AMNESTIC DISORDERS</p>	<p>The student will:</p> <ol style="list-style-type: none"> 1. list a differential diagnosis of psychiatric, substance-induced, and

	<p>general medical conditions that may present with amnesia and discuss the evaluation and treatment of persons with amnesia;</p> <ol style="list-style-type: none"> state the clinical features of dissociative amnesia, dissociative fugue, depersonalization disorder, and dissociative identity disorder; discuss the hypothesized role of psychological trauma, including sexual, physical, and emotional abuse, in the development of dissociative disorders (and posttraumatic stress disorders); discuss the etiologic hypotheses, epidemiology, clinical features, course, and treatment of dissociative identity disorder; and state the indications for an amobarbital interview and for hypnosis.
12. EATING DISORDERS	<p>The student will:</p> <ol style="list-style-type: none"> summarize the etiologic hypotheses, clinical features, epidemiology, course, comorbid disorders, complications, and treatment for anorexia nervosa; summarize the etiologic hypotheses, clinical features, epidemiology, course, comorbid disorders, complications, and treatment for bulimia; discuss the role of the primary care physician in the prevention and early identification of eating disorders; and list the medical complications and indications for hospitalization in patients with eating disorders.
13. SEXUAL DYSFUNCTIONS AND PARAPHILIAS	<p>The student will:</p> <ol style="list-style-type: none"> discuss the anatomy and physiology of the male and female sexual response cycles; obtain a patient's sexual history, including an assessment of risk for sexually transmitted diseases, especially HIV; state the implications of the high prevalence of sexual dysfunctions in the general population, particularly in the medically ill; list the common causes of sexual dysfunctions, including general medical and substance-related etiologies; summarize the manifestations, differential diagnosis, and treatment of hypoactive sexual desire disorder and sexual aversion disorder; male erectile disorder and female sexual arousal disorder; female and male orgasmic disorders and premature ejaculation; and dyspareunia and vaginismus; define the term paraphilia; list and define each of the common paraphilias; review the management of the paraphilias; and discuss the prevalence, manifestations, diagnosis, and treatment of gender identity disorder.
14. SLEEP DISORDERS	<p>The student will:</p> <ol style="list-style-type: none"> describe normal sleep physiology, including sleep architecture, throughout the life cycle; obtain a complete sleep history; discuss the manifestations, differential diagnosis, evaluation, and treatment of primary sleep disorders, including dyssomnias and parasomnias; describe typical sleep disturbances that accompany psychiatric and substance use disorders; summarize the effect(s) of psychotropic medications on sleep; and describe sleep hygiene treatment
15. PERSONALITY DISORDERS	<p>The student will:</p> <ol style="list-style-type: none"> explain how the DSM-IV defines personality traits and disorders, and identify features common to all personality disorders; list the three descriptive groupings (clusters) of personality disorders in the DSM-IV and describe the typical traits of each personality disorder; summarize the neurobiological, genetic, developmental, behavioral, and

	<p>sociological theories of the etiology of personality disorders, including the association of childhood abuse and trauma;</p> <ol style="list-style-type: none"> 4. discuss the biogenetic relationships that exist between certain Axis I and Axis II disorders (e.g., schizotypal personality disorder and schizophrenia); 5. discuss the epidemiology, differential diagnosis, course of illness, prognosis, and comorbid psychiatric disorders in patients with personality disorders; 6. list the general medical and Axis I psychiatric disorders that may present with personality changes; 7. identify difficulties in diagnosing personality disorders in the presence of stress, substance abuse, and other Axis I disorders; 8. discuss the concepts of hierarchical levels of defense and regression under stress, and list typical defense mechanisms used in various personality disorders; 9. list the psychotherapeutic and pharmacologic treatment strategies for patients with personality disorders; 10. discuss the management of patients with personality disorders in the general medical setting; and 11. summarize principles of management of patients with personality disorders, including being aware of one's own response to the patient, soliciting consultations from colleagues when indicated, and using both support and nonpunitive limit setting.
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<p>16. CHILD AND ADOLESCENT PSYCHIATRY</p>	<p>The student will:</p> <ol style="list-style-type: none"> 1. compare and contrast the process of psychiatric evaluation of children and adolescents at different developmental stages with that of adults; 2. state the value of obtaining data from families, teachers, and other nonphysicians in the evaluation and treatment of children and adolescents; 3. state the indications for psychological assessment in children and list some of the common tests in a psychometric evaluation; 4. list a differential diagnosis and outline the evaluation of academic performance and behavioral problems in children; 5. summarize the etiologic hypotheses, clinical features, epidemiology, pathophysiology, course, comorbid disorders, complications, and treatment for attention-deficit hyperactivity disorder and conduct disorder; 6. discuss the etiologies, epidemiology, clinical features, and psychiatric comorbidity of mental retardation; 7. name the major clinical features of autism; 8. differentiate developmentally based anxiety (e.g., stranger, separation anxiety) from pathological anxiety disorders in childhood; 9. describe typical clinical features of anxiety disorders at different developmental stages; 10. compare and contrast the clinical features of mood disorders in children with that of adults; 11. discuss the epidemiology and clinical features of suicide risk in adolescents; 12. state when and how a physician must protect the safety of a child who may be the victim of physical or sexual abuse or neglect; and 13. identify signs and symptoms of child sexual and physical abuse, and discuss its short- and long-term psychiatric sequelae. 14.
<p>17. GERIATRIC PSYCHIATRY</p>	<p>The student will:</p> <ol style="list-style-type: none"> 1. employ a cognitive screening evaluation to assess and follow patients with cognitive impairment, and state the limitations of these instruments;

	<ol style="list-style-type: none"> 2. compare and contrast the clinical presentation of depression in elderly patients with that of younger adults; 3. summarize the special considerations in prescribing psychotropic medications for the elderly; 4. appreciate that multiple medications can cause cognitive, behavioral, and affective problems in the elderly; 5. compare, contrast, and give examples of the following: delirium, dementia (including treatable dementia), dementia syndrome of depression (pseudodementia) subcortical and cortical dementia; 6. state the prevalence of delirium in hospitalized elderly patients; 7. discuss the differential diagnosis, etiological hypotheses, epidemiology, clinical features, and course of Alzheimer's disease, vascular dementia, and Parkinson's disease; 8. summarize the assessment and treatment of a patient with dementia; 9. discuss the physician's role in diagnosing, managing, and reporting elderly victims of physical or sexual abuse; and 10. discuss the role of losses in the etiology of psychiatric disorders in the elderly. 11.
<p>18. PSYCHOPHARMACOLOGY</p>	<p><i>Anxiolytics</i> The student will discuss:</p> <ol style="list-style-type: none"> 1. the indications, mechanism of action, pharmacokinetics, common side effects, signs of toxicity, and drug interactions of the different benzodiazepines and sedative-hypnotics; 2. the consequences of abrupt discontinuation; 3. patient characteristics associated with benzodiazepine abuse; 4. guidelines for prescribing benzodiazepines; and 5. the differences (mechanism of action, onset of effect, and indications) between buspirone and benzodiazepines. <p><i>Antidepressants</i> The student will summarize:</p> <ol style="list-style-type: none"> 1. indications, mechanisms of action, pharmacokinetics, common or serious side effects (including overdose potential), signs of toxicity, and drug interactions of tricyclics, second generation (atypical) antidepressants, monoamine oxidase inhibitors, and selective serotonin reuptake inhibitors; 2. the pretreatment assessment and strategies of antidepressant use, including ensuring adequacy of trial and blood level monitoring; 3. the effect of antidepressants on the cardiac conduction system and electrocardiogram; 4. dietary and pharmacologic restrictions in prescribing a monoamine oxidase inhibitor; and 5. advantages of selective serotonin reuptake inhibitors. <p><i>Antipsychotics (neuroleptics)</i> The student will discuss:</p> <ol style="list-style-type: none"> 1. the indications, mechanisms of action, pharmacokinetics, common or serious side effects, signs of toxicity, and drug interactions of antipsychotics; 2. differences between high-potency and low-potency antipsychotics, including the side effects common to each group; 3. diagnosis and management of extrapyramidal side effects including acute dystonia, parkinsonism, akathisia, tardive dyskinesia, and neuroleptic malignant syndrome; and 4. the indications and special considerations in using clozapine and risperidone. <p><i>Mood Stabilizers</i></p>

	<p>The student will discuss:</p> <ol style="list-style-type: none">1. the indications, mechanism of action, pharmacokinetics side effects, signs of toxicity (neurological gastrointestinal, renal, endocrine, cardiac), and drug interactions of lithium;2. the pretreatment assessment and strategies of use of lithium, including blood level monitoring; and3. the indications, mechanisms of action, pharmacokinetics, common and serious side effects, toxicity, drug interactions, and plasma level monitoring for carbamazepine, valproic acid, and calcium channel blockers. <p><i>Anticholinergics</i></p> <p>The student will discuss:</p> <ol style="list-style-type: none">1. the indications, mechanisms of action, pharmacokinetics, common and serious side effects, signs of toxicity, and drug interactions of anti-parkinsonian agents;2. which antidepressants and antipsychotics have a higher incidence of anticholinergic side effects;3. special considerations in prescribing these medications in the elderly; and4. the high prevalence of anticholinergics in over-the-counter medications. <p><i>Electroconvulsive Therapy (ECT)</i></p> <p>The student will summarize:</p> <ol style="list-style-type: none">1. indications, physiologic effects, and side effects of ECT;2. clinical situations in which ECT may be the treatment of choice;3. pretreatment assessment, including conditions requiring special precautions; and4. the medical care of the patient before, during, and after ECT treatment. <p><i>Other Topics</i></p> <p>The student will discuss:</p> <ol style="list-style-type: none">1. the use of beta blockers in psychiatry and2. the indications for and side effects of stimulants.
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<p>19. PSYCHOTHERAPIES</p>	<p>The student will:</p> <ol style="list-style-type: none"> 1. state the characteristics and techniques of, and common indications and contraindications for, psychodynamic psychotherapy, psychoanalysis, supportive psychotherapy, cognitive and behavioral therapies, group therapies, couples and family therapy, and psychoeducational interventions; 2. describe behavioral medicine interventions (e.g., relaxation training, assertiveness training, contingency management, stimulus control, relapse prevention, biofeedback) and know for which medical problems they are effective (e.g., smoking cessation) and ineffective; 3. define and begin to recognize transference, countertransference, and commonly used defense mechanisms; discuss the concepts of hierarchical levels of defense and regression under stress; and list some typical defense mechanisms used in various personality disorders; 4. state the major findings of studies of the efficacy of psychosocial interventions in the treatment of psychiatric and general medical disorders and in reducing health care costs; and 5. discuss techniques for increasing the likelihood of successful referral for psychotherapy.



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Medicine
Section of Anaesthesiology**

A) Basic Information

- 1. Course title: Anaesthesia**
- 2. Specialty: M.B.B.S. program**
- 3. Department offering the course: Anaesthesiology department**
- 4. Academic year: Second semester Fifth year**
- 5. Date of specification approval: Department council date:**
- 6. Internal Evaluator :Prof . Dr. -----**
- 7. Allocated marks: 100 marks.**
- 8. Course duration: 2 weeks of teaching.**
- 9. Course Code: MED521**
- 10. Credit Hours: 2.25 Credits**

B) Professional Information:

Anesthesia

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

General objectives Please add general objectives

- 1. Airway management skills**
- 2. Mask ventilation and tracheal intubation,**
- 3. securing intravenous access**
- 4. Preoperative assessment of the Airways.**
- 5. The appropriate use of local anaesthetic Agents**

Program of teaching undergraduate fifth year medical students during the rotation in Anaesthesia and operating theatres.

Specific objectives

<p><u>Skills to be learned</u></p> <ol style="list-style-type: none"> 1. Intravenous cannulation 2. Setting up intravenous infusion 3. Connecting monitoring devices 4. Maintenance of the Airway in unconscious patient 	<ol style="list-style-type: none"> 5. Observation of induction of Anaesthesia 6. Observation of Endotracheal Intubation 7. Observation and monitoring recovery from General Anaesthesia 8. Observation of Local and Regional Blocks
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<p><u>I. Anaesthetic Agents</u> <u>(Intravenous Anaesthetic)</u></p>	
<p>1.1. Barbiturate: (Thiopentone)</p>	
<p>Thiopentone</p>	<p>Ketamine</p>
<ul style="list-style-type: none"> ● physical, chemical properties and presentation 	<ul style="list-style-type: none"> ● physical, chemical properties and presentation
<ul style="list-style-type: none"> ● Pharmacokinetics 	<ul style="list-style-type: none"> ● Pharmacokinetics and mechanism of action
<ul style="list-style-type: none"> ● Pharmacodynamics (effect on the different organ systems) 	<ul style="list-style-type: none"> ● Pharmacodynamics (effect on the different organ systems)
<ul style="list-style-type: none"> ● Dosage and Administration 	<ul style="list-style-type: none"> ● Dosage and Administration
<ul style="list-style-type: none"> ● Indications and Contraindications(absolute and relative) 	<ul style="list-style-type: none"> ● Indications and Contraindications
<ul style="list-style-type: none"> ● Adverse effects (extravascular, intraarterial, Allergy.....) 	
	<p>Other adJuvant intravenous anaesthetic agents:</p>
<p>1.2.Non- Barbiturate: (Propofol, Ketamine)</p>	<ul style="list-style-type: none"> ● Benzodiazepines (only midazolam and Diazepam)
<p>Prpopfol</p>	<ul style="list-style-type: none"> ● Narcotic Agonists and Antagonists : Definition, Site of action, Effect on organ systems, Fentanyl and Morphine. ● Narcotic Antagonist :Naloxone.
<ul style="list-style-type: none"> ● physical, chemical properties and presentation 	
<ul style="list-style-type: none"> ● Pharmacodynamics (effect on the different organ systems) 	
<ul style="list-style-type: none"> ● Dosage and Administration 	
<ul style="list-style-type: none"> ● Indications and Contraindications 	

<p><u>II. Anaesthetic Agents</u> <u>(Inhalational Agents)</u></p>	
<ul style="list-style-type: none"> ● MAC and factors which alter MAC. 	<p>Nitrous Oxide(N2O):</p>
<ul style="list-style-type: none"> ● Factors determining how quickly the inhalational agent reaches the alveoli 	<ul style="list-style-type: none"> ● physical properties
<ul style="list-style-type: none"> ● Factors determining how quickly the inhalational agent 	<ul style="list-style-type: none"> ● MAC Value of N2O ● The second gas effect

reaches the brain from the alveoli in order to establish anaesthesia	<ul style="list-style-type: none"> • Diffusion hypoxia
<ul style="list-style-type: none"> • MAC Value of N₂O, Halothane, Isoflurane, Sevoflurane 	<ul style="list-style-type: none"> • Effect on closed gas spaces
	Halothane, Isoflurane, Sevoflurane
	<ul style="list-style-type: none"> • IN DETAILS
	<ul style="list-style-type: none"> • Enlurane. And Deslurane JUST the value of MAC

III. Muscle relaxant& Anticholinergic drugs& Cholinesterase inhibitors	
1. Physiology of neuromuscular Transmission	
2. Depolarizing Muscle relaxant: <ul style="list-style-type: none"> • Suxamethonium: <ul style="list-style-type: none"> * Structure and Mechanism of action * Dose onset and duration of action * Indications and Contraindications * Side effects of Suxamethonium * Factor Affecting duration of Suxamethonium 	4. Anticholinergic drugs:(mainly Atropine) <ul style="list-style-type: none"> * Effect on the different organ systems: (Cardiovascular, Salivary Glands, smooth muscles and Pupils) * Dose. *(Scopolamine and Glycopyrrolate: differences to Atropine)
3. Non-Depolarizing Muscle relaxant: <ul style="list-style-type: none"> * Mechanism of action * Factor Affecting duration of Non-Depolarizing Muscle relaxant <ul style="list-style-type: none"> • Atracurium and Cis-Atracurium (Tracrium®): in Details • Rocuronium bromide (Esmeron®): in Details • Pancuronium bromide (Pavulon®): in Details • Vecuronium bromide (Norcuron®): in Details 	5. Cholinesterase inhibitors: (mainly Neostigmin) <ul style="list-style-type: none"> * Mechanism of action * effect on the different organ systems: (Cardiovascular, Salivary Glands, smooth muscles and Pupils) * Dose. 6. The role of Anticholinergic drugs (Atropin) and Anti Cholinesterase (Neostigmine) in the Anesthesia?
<ul style="list-style-type: none"> • JUST MENTION BY NAME: * Mivacurium * Alcuronium * Tubocurarine 	

IV. Conduct of Anesthesia <ol style="list-style-type: none"> Inhalational Induction: <ul style="list-style-type: none"> * Procedure * Indications * Difficulties and Complications Maintenance of Anaesthesia <ol style="list-style-type: none"> Conduct of inhalational Anaesthesia with spontaneous ventilation Difficulties and complications Airway Maintenance delivery of inhalational agents <ul style="list-style-type: none"> * face mask * Laryngeal mask * Tracheal intubation (Indications) 	<ol style="list-style-type: none"> Anaesthesia for tracheal intubation: <ol style="list-style-type: none"> Inhalational technique for intubation Relaxant Anaesthesia <ul style="list-style-type: none"> * Indications Conduct of extubation: <ul style="list-style-type: none"> * Procedure * Complications of tracheal extubation
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V. Intubation and Anatomy of the Airway And Anesthesia apparatus	5. Laryngoscopes and type of blades
1. Assessment of patients airway including 1-2-3-Test	6. Tracheal tubes: size and types of tubes
2. Different classifications of airway structures	7. Shape of tube and specialized tubes
3. The technique of tracheal intubation (the 5 steps in	8. the laryngeal mask

Detail)	
4. The anatomical structures seen in region of intubation (name of these structures)	Other apparatus including oro- and nasopharyngeal airways.

VI. Monitoring in Anesthesia	
1. Anesthesia Depth	5. how to identify Cyanosis
2. Guidelines to the practice of anaesthesia and patient Monitoring	6. O ₂ - Hb-dissociation curve
3. What and how we monitor the Oxygenation, ventilation, \circulation, Temperature	7. the normal values of monitored parameters for a healthy adult
4. Monitoring : ECG, Pulsoximetry, Blood pressure , CVP, Capnography EtCO ₂	Undergoing general anesthesia

<u>VII. Local Anaesthetic Agents</u>	<u>VIII. Local Anaesthetic Techniques</u>
<p>The Pharmacology of Local Anaesthetic Agents</p> <p>1. Definition</p> <p>2. Classification of Local Anaesthetic Agents</p> <p> 2.1. Comparison between the two Classes.</p> <p>3. Mode of action</p> <p>4. Preparation of Local Anaesthetic Agents</p> <p>5. Addition of Vasoconstrictors</p> <p> 5.1. Indications and Contraindications and Dosage.</p> <p> 5.2. How can I prepare Adrenaline 1:200000?</p> <p>6. Clinical uses of local anesthetic agents</p> <p>7. Lidocaine</p> <p>8. Toxicity (Causes, Prevention and Treatment)</p> <p> 8.1. Systemic Toxicity</p>	<p>1. Central Block: Spinal and Epidural Anaesthesia</p> <p>1.1. Procedure including Anatomy,</p> <p>1.2. Indications and contraindications</p> <p>1.3. Complications (Prevention and Treatment)</p> <p>2. I.V.R.A. (BIER S Block)</p> <p>1.1. Procedure</p> <p>1.2. Indications and contraindications</p> <p>1.3. Complications (Prevention and Treatment)</p>



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Medicine
Division of dermatology

A)Basic Information

- 1. Course title: Dermatology**
- 2. Specialty: M.B.B.S. program**
- 3. Department offering the course: Dermatology department**
- 4. Academic year: Second semester Fifth year**
- 5. Date of specification approval: Department council date:**
- 6. Internal Evaluator :Prof . Dr. -----**
- 7. Allocated marks: 100 marks.**
- 8. Course duration: 2 weeks of teaching.**
- 9. Course Code: MED522**
- 10. Credit Hours: 2.25 Credits**

B)Professional Information:

I. Course Description:

This is a 2-weeks full time rotation in Dermatology. During this course medical students are introduced to general Dermatology with emphasis on performing dermatological history and examination using dermatological descriptive terms. In addition students are exposed to various clinical cases during clinics at KingAbdullahUniversityHospital and dermatology clinics at Royal Medical Services and Ministry of Health. Common topics are also emphasized on by seminar discussions done on daily basis during the 2 weeks in dermatology.

II. General Objectives:

1. Students should know the basic Anatomy, physiology and function of various skin structures, layers and as an Immune organ (skin immune system).
2. Students should become able to do History and dermatological examination using dermatological descriptive terms (primary and secondary lesions).
3. Students should become familiar with Bed-side diagnostic tools used in dermatology that can help in narrowing or reaching definitive diagnosis for various Dermatoses.
4. Students are expected to know clinical presentations, complications, diagnostic workup for common Dermatoses. (see outline and seminar list).
5. Students are expected to know basic principles about managing common dermatological disorders. (see outline and seminar list)

III. Teaching Methods:

1. Clinical sessions:

Students are rotated during their 2 weeks in Dermatology to various clinics at KingAbdullahUniversityHospital and 2 other community hospitals. Dermatology clinics tend to be very busy and during these sessions students are exposed to many patients with various dermatological problems. During clinics emphasis is directed at teaching students how to obtain History and do proper dermatological examination for patients with various Dermatoses. Also students get to see various Bed-side diagnostic tools (Wood's Light, Diascopy, KOH...) being used and they should become familiar with using these diagnostic aids themselves and know how to interpret them and use that towards reaching final diagnosis. Discussion towards differential diagnosis, diagnostic workup and then principles of management is also done bed-side for especially the common Dermatoses.

2. Seminars:

Focused on common skin diseases as shown in seminar topics. The students will be responsible for most of the discussion and presentation of previously selected clinical cases that represent the most important parts of each seminar topic. The clinical cases are selected in way that reflects the common presentations for common dermatological disorders and students are expected to learn clinical picture, diagnostic tests and principles of managing these cases. A facilitator (consultant or resident) is only coordinating the discussions and making sure that the students are adherent to the relevant seminar topic areas. The topics covered are pre-decided on by course teachers and cover the main areas students are expected to know during the course. General aspects of management appropriate to student's level is also discussed.

3. Home works:

Each student will be required to do a case study on one clinical case each week. This will include complete history, proper dermatological examination, diagnostic workup done and treatment. The student should give some discussion of the relevant diagnosis and its management and complications of that condition and also complications of treatments used for that condition.

IV. Detailed Course Description and Specific Objectives for each Topic:

Topics that will be covered include:

1. Structure, function, history, dermatological examination and approach to dermatological patients:

- a. Students are expected to know basic skin structure including various skin layers and additional structures present within skin.
- b. Functions of various structures should also be known.
- c. The students are introduced to dermatological history and examination using the proper dermatological descriptive terms and how to produce a differential diagnosis in accordance with history and examination findings.
- d. Also the use of various bed-side diagnostic aids is also introduced and students should become familiar with these tests during the clinical sessions especially using Wood's light, KOH test, Diascopy, Patch Test, Tzanck smear.

2. Approach to patients with Red Non –scaly rash.

- a. Students are introduced to the common conditions that present with redness without scales including: reactive erythemas (Erythema multiforme, Erythema Nodosum and Urticaria), vasculitis, drugs and common infections associated with a rash.

- b. Common clinical presentations and complications related to these conditions should be also understood by students.
 - c. Diagnostic workup and management for various conditions in this group.
- 3. Approach to patients with Red Scaly Rashes (Papulosquamous conditions):**
Students should know:
- a. What is a scale and the importance of finding scales on a rash.
 - b. Differential diagnosis for a scaly rash. Emphasis given to common scaly Dermatoses: Eczema, Psoriasis, Lichen Planus, Pityriasis Rosea and Fungal infections.
 - c. Main clinical presentations for various scaly Dermatoses.
 - d. Diagnostic workup for scaly Dermatoses
 - e. Main complications
 - f. Principles of management.
- 4. Infections :**
- a. Normal flora and related clinical problems to skin flora.
 - b. Staphylococcal infections: Impetigo, Ecthyma, folliculitis, boils and recurrent staphylococcal infections.
 - c. Streptococcal infections: cellulitis/erysipelas.
 - d. Viral infections: Human papilloma virus (warts) and Herpes virus (1, 2, and 3).
- 5. Approach to patients with Generalised Pruritus/Itch:**
- a. Common dermatological caused: Scabies and Lice. Other dermatological conditions associated with rash (e.g.: Eczema, Psoriasis, Urticaria...) or dermatological causes not associated with rash (neurodermatitis, senile, dry skin..)
 - b. Non-Dermatological conditions: especially underlying medical conditions known to be associated with pruritus e.g: chronic liver disease, Renal failure, Lymphomas, Leukemias, anemia, Thyroid dysfunction.
- 6. Approach to patients with Pigmentary change: Hyper and Hypopigmentation:** students should know the following:
- a. Differential diagnoses for diseases causing pigmentary changes.
 - b. Clinical presentation for common causes of pigmentary change including hyper and hypopigmentation.
 - c. Complications related to such conditions and treatments used in their management.
 - d. Principles of therapy
- 7. Bullous Disorders:**
- a. Simplified classification: Genetic, Imuunobullous, infectious, and other causes: frictional/traumatic, Diabetic bulla, insect bites and edmea bulla.
 - b. Pathogenesis
 - c. Clinical picture
 - d. Complications
 - e. Principles of therapy
- 8. Approach to patients with hair, nail diseases:**
- a. Patients with diffuse hair loss: causes, diagnosis, principles of management.

- b. Patients with localised hair loss: scarring vs. non-scarring. Various causes, complications, diagnosis and principles of treatment.
- c. Patients with nail problems: emphasis on common disorders including: Psoriasis, Lichen planus, Onychomycosis.

9. Acne and Rosacea:

- a. Pathogenesis
- b. Clinical picture
- c. Complications
- d. Principles of therapy

V. Weekly Teaching Program:

A typical weekly program will be as follows:

	Dermatology clinic	Seminar
Sunday	8.30-12.00	1.00-2.00
Monday	8.30-12.00	1.00-2.00
Tuesday	8.30-12.00	1.00-2.00
Wednesday	8.30-12.00	1.00-2.00
Thursday	8.30-12.00	1.00-2.00

VI. Evaluation:

- **In-course evaluation** considering: attendance, attitude, clinical sessions, group discussions (20%)
- **End course clinical examination. (40%)**
- **Final written exam.(40%)**

VII. Recommended References:

- Clinical Dermatology, 4th edition by HUNTER, SAVIN and DAHL.
- Web sites:
 - o www.bad.org.uk
 - o www.aad.org
 - o www.dermnetz.org
 - o <http://tray.dermatology.uiowa.edu>
 - o <http://dermatlas.med.jhmi.edu>

Dermatology Seminars

1. Introduction to clinical Dermatology: Basic skin structure, Dermatology History and Examination:

- a. Students should become familiar with skin structure and function of each skin component
- b. Student should learn how to obtain proper dermatology history
- c. Students should know how to perform dermatological examination and become able to describe various types of lesions and rashes using dermatologic terms

2. approach to patients with Red non-scaly rashes:

- a. students should become familiar with various disorders that present with common red non-scaly rashes including: Urticaria, erythema multiforme, erythema nodosum and vasculitis
- b. to know the important diagnostic investigations required for patients with above dermatoses

- c. To know basic therapeutic options for treatment of patients with erythemas
3. **Approach to patients with Red scaly rashes:**
- a. To know common dermatoses that are scaly including: Psoriasis, Eczema, Fungal infections, Lichen planus and pityriasis Rosea and how to arrange differential diagnosis for such patients based on history and examination
 - b. Students know clinical presentation for patients with scaly rashes and what investigations required to reach definitive diagnosis
 - c. Students should become aware of basic management principles for patients with scaly rashes and what common complications they might develop
4. **Approach to patients with skin infection:**
- a. Students should know clinical presentation, complications and treatments used for patients with common bacterial infections especially Staphylococcus aureus and Streptococci (Erysipelas)
 - b. Students should know clinical presentation, complications and treatment options for patients with common viral infections of skin especially: viral warts, Herpes virus
 - c. Students should know clinical presentation, complications and treatments used for patients with fungal infections including Tinea: capitis, corporis, cruris, pedis and onychomycosis.
5. **Approach to patients with color change (Hyper and Hypopigmentation):**
- a. To know various causes of pigmentary change and the clinical presentation
 - b. To be able to perform diagnostic workup for patients with pigmentary change to reach likely diagnosis
 - c. To know principles of therapy for patients with pigmentary change
6. **acne and Rosacea:**
- a. to know the clinical presentation of both acne and rosacea and to identify clinically the severity grading
 - b. To know the important complications related to both acne and rosacea including scarring and ocular complications
 - c. Students should know the basic treatment principles for these conditions and the important complications related to these treatments.
7. **Approach to patients with Bullae:**
- a. Students should know common diseases that present with bullae and their clinical presentations
 - b. To be able to perform needed investigations to reach diagnosis
 - c. What complications related to these disorders and their treatments
8. **Approach to patients with hair loss:**
- a. To become able to identify various causes for hair loss
 - b. To be able to recognize various types of hair loss including generalized, localized, scarring and non-scarring hair loss
 - c. To know how to investigate patients with hair loss and to know principles of treatment for various causes

9. Approach to patients with Generalized pruritus:

- a. Students should understand various causes for generalized pruritus including dermatological and underlying medical causes. Emphasis given to common dermatoses causing pruritus especially scabies and lice
- b. To understand the management plan for patients with pruritus with emphasis on scabies and lice



**21 Sep. University of Medical and Applied sciences
Faculty of medicine
Department of special surgery**

A)Basic Information

- 1. Course title: Otorhinolaryngology**
- 2. Specialty: M.B.B.S. program**
- 3. Department offering the course: Otorhinolaryngology department**
- 4. Academic year: Second semester Fifth year**
- 5. Date of specification approval: Department council date:**
- 6. Internal Evaluator :Prof . Dr. -----**
- 7. Allocated marks: 100 marks.**
- 8. Course duration: 2 weeks of teaching.**
- 9. Course Code: MED523**
- 10. Credit Hours: 2.25 Credits**

B)Professional Information:

COURSE DESCRIPTION:

This is an introductory two weeks clinical rotation offered to fifth year medical students. During the rotation, common diseases of ear nasopharynx oral cavity are emphasized. Students see patients in the clinic with the attending staff and gain preliminary experience in performing otoscopic examinations of the ears, examinations of the nose, nasopharynx, and oral cavity and larynx, . Students will be familiar with the diagnosis and management of the common presenting problems in otolaryngology as well as emergency Otolaryngology cases. Skills necessary to take relevant medical history and examination are well emphasized

GENERAL OBJECTIVES:

By the end of this course, students are expected to:

1. To take proper history and perform physical examination
2. To know the investigation of patients with Otolaryngology disorders.
3. To know how to deal with emergency situation of Otolaryngology.
4. To know a wide spectrum of Otolaryngology diseases

METHODS OF INSTRUCTION:

- Morning report.
- Seminars.
- Bed-side teaching.

- Outpatient clinics.

III. EVALUATION AND DISTRIBUTION OF MARKS:

- **In-course evaluation = 20%**
- **Final clinical exam. = 40%**
- **Final written exam. = 40%**

IV. RECOMMENDED TEXT BOOKS:

- **Key topics of otolaryngology .**

	Lecture notes of otolaryngolog	OBJECTIVES
1	Introduction : history & physical examination	<ul style="list-style-type: none"> - Learn basic clinical skills, including the ability to obtain history from patient with ENT problem, perform complete ENT physical examination, interpretation of the clinical findings to reach the differential diagnosis and to formulate the plan of management. - To know the relationship between Ear, Nose and Throat. - To know the principles of audiology and hearing assessments. - To be familiar with patients most commonly seen in otolaryngology clinic.
2	Hearing loss & Vertigo	<ul style="list-style-type: none"> - Define the hearing loss and vertigo. - -To differentiate between the conductive and sensory neural hearing loss. - To know the differences between vertigo and other causes of dizziness. - To know the common causes of hearing loss and vertigo and how to diagnose them. - Outline the principles of audiological and radiological assessment for hearing loss and vertigo - Outline the treatment ways.
3	Chronic rhinosinusitis & Acute rhinosinusitis	<ul style="list-style-type: none"> - To know the definition of rhinosinusitis and classifications. - To know the causes and predisposing factors for rhinosinusitis - How they can diagnose rhinosinusitis. - When they need to investigate in patient with rhinosinusitis. - Outline the ways of management of acute and chronic rhinosinusitis. - Enumerate the complications and their management.
4	Acute and chronic otitis media & complications	<ul style="list-style-type: none"> - To define the otitis media and its different classifications. - To know the causes of otitis media and predisposing factors. - To know the reason for classification of otitis media and how to manage each subclass. - Investigations of otitis media and its complications, audiological and radiological. - To know the cholesteatoma and its management. - Outline the complications and their management.
5	Foreign bodies in ENT	<ul style="list-style-type: none"> - To know the importance of management of foreign bodies in ENT - To know what are the common foreign bodies seen in different orifices. - To be familiar with the emergencies in ENT. - To know the principles of management of foreign bodies in ENT. - Outline the possible complications and how to prevent and management.
6	Adenoids. acute and chronic tonsillitis, chronic sore throat	<ul style="list-style-type: none"> - To know about the anatomy of lymphoid tissue of the Waldeyer's ring.

		<ul style="list-style-type: none"> - Outline the common adenotonsillar disorders. - To know the indications and contraindications for adenotonsillectomy. - Highlight on the obstructive sleep apnea and its cause. - Treatment plan for different adenotonsillar and sleep disorders.
7	Neck masses, pharyngeal tumors.	<ul style="list-style-type: none"> - To be familiar with anatomy of the neck and highlight on important land marks. - Classify the neck masses. - Clinical assessment of neck masses. - Investigate patient with neck mass. - Plan management of patients with neck mass. - To know the common pharyngeal tumors and their presentation. - Investigation and management plans for pharyngeal tumors.
8	Epistaxis and facial trauma stridor and tracheostomy	<ul style="list-style-type: none"> - To know how to deal with emergency situations in ENT. - To be familiar with the blood supply of the nose. - Outline the cause of epistaxis and stridor. - To know the indication of tracheostomy. - To know how to perform emergent tracheotomy.
9	Hoarseness of voice, laryngeal tumors Acute & chronic otitis externa	<ul style="list-style-type: none"> • To know the voice box (larynx) and its disorders. • Outline the causes of hoarseness. • To know the common laryngeal tumors and their presentation. • Investigation and management plans for laryngeal tumors. • To know the otitis externa, its causes and management.

Weekly Teaching activities including lecture, laboratory, interactive case, seminars etc

WEEK 1

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
8-9 morning report	8-9 morning report	8-9 morning report	8-9 morning report	8-9 morning report
9-12 out patient clinic	9-12 out patient clinic	9-12 out patient clinic	9-12 out patient clinic	9-12 out patient clinic
12 :30-13:30 seminar	12 :30-13:30 seminar	12 :30-13:30 seminar	12 :30-13:30 seminar	12 :30-13:30 seminar
2-4 out patient clinic or teaching round	2-4 out patient clinic or teaching round	2-4 out patient clinic or teaching round	2-4 out patient clinic or teaching round	2-4 out patient clinic or teaching round

WEEK 2

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
8-9 morning report	8-9 morning report	8-9 morning report	8-9 morning report	8-9 morning report
9-12 out patient clinic	9-12 out patient clinic	9-12 out patient clinic	9-12 out patient clinic	9-12 out patient clinic
12 :30-13:30 seminar	12 :30-13:30 seminar	12 :30-13:30 seminar	12 :30-13:30 seminar	12 :30-13:30 seminar
2-4 out patient clinic or teaching round	2-4 out patient clinic or teaching round	2-4 out patient clinic or teaching round	2-4 out patient clinic or teaching round	2-4 Clinical Exam



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine**

A)Basic Information

- 1. Course title: Forensic Medicine**
- 2. Specialty: M.B.B.S. program**
- 3. Department offering the course: Forensic Medicine department**
- 4. Academic year: Second semester Fifth year**
- 5. Date of specification approval: Department council date:**
- 6. Internal Evaluator :Prof . Dr. -----**
- 7. Allocated marks: 100 marks.**
- 8. Course duration: 2 weeks of teaching.**
- 9. Course Code: MED524**
- 10. Credit Hours: 2.25 Credits**

B)Professional Information:

Course description:

Forensic terminology with emphasis on the understanding of the underlying pathology of traumatic and sudden, unexpected deaths encountered.

The course deals with medico-legal investigation of death and injury due to natural causes, accidents, and violence. It covers analysis/investigation of transportation injuries, of homicides, suicides due to various causes, and sexual crimes and methods for identification and guidelines for quality control assurance.

General objectives:

By the end of this course, students are expected to understand:

1. A working knowledge of the principles of medical, scientific and technical evidence-gathering and the presentation of such evidence in the courts of law.
2. Appreciate both the scope and the limitations of medical and scientific investigation in assisting the courts.
3. Give a clear account of the procedures used in death investigation, the role of the Attorney General and the rules governing fatal accident inquiries.
4. Construct, from basic scientific and other factual information supplied concerning a scene of death, a logically argued re-construction of the events leading up to death, indicating what further investigations would be required for a full inquiry of this type.
5. Show a basic knowledge of the professional and ethical considerations governing everyday medical practice.

Specific objectives:

Unit	Topic	Specific objectives
Forensic Medicine	1) Sudden Natural Death (SND)	<ol style="list-style-type: none"> 1. know a working approach, the incidence and distribution of SND and recent trends in its occurrence 2. Be able to list the major causes of sudden natural death. 3. Be able to analyse cases of trauma and disease.
	2) Child Abuse & Family Violence	<ol style="list-style-type: none"> a. Physical Abuse <ol style="list-style-type: none"> 1. be able to define child abuse 2. have a basic knowledge of the historical recognition of child abuse 3. be able to list the major clinical, radiological and pathological signs, of physical abuse 4. be able to list the major natural conditions which may mimic child abuse 5. be able to state the general strategy for dealing with child abuse b. Sexual Abuse <ol style="list-style-type: none"> 1. be able to define child sexual abuse 2. be able to list the major clinical signs of child sexual abuse 3. be able to describe the investigation of a case of suspected child sexual abuse, including the medical examination and laboratory tests
	3) Alcohol- Ethanol	<ol style="list-style-type: none"> 1. know briefly the sources, absorption, metabolism and elimination of ethanol. 2. know the measurement of ethanol consumption in units. 3. know the effects of ethanol. 4. know the local and some foreign laws concerning drinking & driving. 5. understand the interpretation of clinical findings in relation to alcohol levels. 6. understand the alcohol related causes of death.
	4) Postmortem Changes	<ol style="list-style-type: none"> 1. know the methods by which the postmortem interval can be estimated and their limitations. 2. know the way in which the body cools after death, its rate of doing so and the factors which influence this 3. know the nature and significance of hypostasis, cadaveric spasm, rigor mortis, putrefaction, mummification and adipoceros change and the rates at which these phenomena occur 4. know the nature and significance of postmortem injury.
	5) Wounds	<ol style="list-style-type: none"> 1. have a clear understanding of the way in which wounds are regarded in law and in medical practice 2. know the definition, mechanism and diagnostic significance of bruises, abrasions, lacerations, incised wounds, stab wounds and fractures and 3. the factors which may modify them 4. know the distinction between bite marks and oral suction marks 5. know the legal significance and medical methods of determining the degree of force used in inflicting an injury
	6) Firearm Wounds	<ol style="list-style-type: none"> 1. understand the basic principles on which modern firearms work and the major substances emitted by a gun when it fires 2. know the basic principles of determination of the range of fire in rifled and smoothbore firearms 3. know the basic distinguishing features of entry and exit firearm wounds. 4. know the basic principles on which determination of accidental, suicidal and homicidal firearm wounding is made.
	7) Asphyxia	<ol style="list-style-type: none"> 1. understand clearly the concept of asphyxia both to lawyers and to medical practitioners, together with its legal significance 2. know the general changes associated with asphyxia and the mechanisms by which they operate. 3. know the main categories of asphyxial and related deaths and the circumstances which bring them about.
	8) Heroin and Cocaine	<ol style="list-style-type: none"> 1. know the classification, sources, types, routes of abuse and mechanism of action. 2. know the clinical features of toxicity, lab diagnosis, general treatment, antidotes and the causes of death.

Weekly teaching activities including:

1. Seminars

Eight seminars in the form of interactive and discussion type of selective topics will be allocated to each group of students.

2. Practical classes

The groups are divided for practical classes in the clinics. The objective is to be familiar with the patterns of injuries assaults and writing medico-legal reports.

3. The students will attend the postmortem examinations conducted by the forensic doctors and understand, collection of samples for pathological examinations and samples from body fluids for toxicological analysis.

WEEK (1)

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
Sudden natural death	Asphyxia	Postmortem changes	Wounds	Clinics

WEEK (2)

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
Ethanol	Child abuse	Gunfire wounds	Heroin and cocaine	Exam.

Assessment:

		EXAM FORMAT	WEIGHT(%)
1	End of rotation exam	Short assays	30%
2	Seminars	Group discussion	20%
3	Evaluation	Attendance & Interaction	10%
4	FINAL EXAM	MCQs	40%

Recommended text book:

Forensic Medicine by Bernard Knight 14th edition (2006)

Suggested readings:

Internet



21 Sep. University of Medical and Applied sciences

Faculty of Medicine Department of Neuroscience

A) Basic Information

1. **Course title: Neuroscience**
2. **Specialty: M.B.B.S. program**
3. **Department offering the course: MEDICINE and surgery departments**
4. **Academic year: Second semester Fifth year**
5. **Date of specification approval: Department council date:**
6. **Internal Evaluator : Prof . Dr. -----**
7. **Allocated marks: 150 marks.**
8. **Course duration: 2 weeks of teaching.**
9. **Course Code: MED525**
10. **Credit Hours: 2.5 Credits**

B) Professional Information:

I. Course description:

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

II. Objectives:

- To give the student a firm background in the fundamentals of the neurological history and examination.
- To give the student the fundamentals of the diagnostic work-up of the neurological and neurosurgical patient.
- To give the student a solid foundation in the pathophysiology and therapeutic options of common neurological and neurosurgical diseases.
- Expose the student to neurological & neurosurgical care in areas of head and spine injuries, congenital anomalies, brain tumors, spinal diseases, stroke, demyelinating diseases, and neuromuscular diseases.

III. Format

- a. S/he shall participate in all daily rounds and teaching sessions with the teaching staff.
- b. The student shall join a daily morning report that discusses the emergency admissions with 6th -year medical students and neurosurgical residents.
- c. The students will have a weekly lecture that covers specific N.S topics.
- d. The student shall participate in twelve seminars that covers common N & N.S problems

IV. Evaluation and distribution of mark.

Evaluation: 20%
Attendance: 10%
First exam: 30%
Final exam: 40%

IV: Recommended Text Books

Principles of Neurosurgery
Setti S. Rengachary & Robert H. Wilkins
Handbook of Neurosurgery
Mark S. Greenberg

V. List of seminars and Objectives

Title of Seminar	Objectives of seminar
1. Diagnosis and management of Head Trauma	<ol style="list-style-type: none">1. Understand and assign the Glasgow Coma Score.2. Recognize the presentation of brain herniation syndromes in the setting of trauma.3. Initiate management of elevated intracranial pressure in head trauma.4. Recognize and initiate management of concussion, brain contusion and diffuse axonal injury.5. Recognize and initiate management of acute subdural and epidural hematoma, including surgical indications.6. Recognize and initiate management of penetrating trauma including gunshot wounds.7. Recognize and understand the principles of management of open, closed and basal skull fractures, including cerebrospinal fluid leak, and chronic subdural hematoma (in children and adults).
2. Diagnosis and Management of Brain Tumor and abscess	<ol style="list-style-type: none">1. Know the relative incidence and location of the major types of primary and secondary brain tumors.2. Understand the general clinical manifestations (focal deficit and irritations, mass effect; supratentorial vs. infratentorial) of brain tumors.3. Recognize specific syndromes: extra-axial (cerebellopontine, pituitary, frontal....) and intra-axial, in brain tumor presentation.4. Review the diagnostic tools that are currently used for evaluation (laboratory tests, radiology, biopsy).5. Understand broad treatment strategies (surgery, radiosurgery, radiation, and chemotherapy) in the treatment of tumors.6. Recognize the clinical manifestations of abscess and focal infections due to local spread, hematogenous disease associated with immune deficiency, and how they differ from the mimic tumors. <p>Understand the general principles in the treatment of abscess and focal intracranial infections.</p>
7. Diagnosis and Management of Spinal Cord injury	<ol style="list-style-type: none">1. The emergency room diagnosis and interpretation of radiologic studies in spinal trauma.2. Initiate acute management of spinal cord injury including immobilization, steroids and systemic measures.3. Understand the definition and subsequent management principles of the unstable spine.4. 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).

5. Diagnosis and Management of Nontraumatic Neck and Back Problems	<ol style="list-style-type: none"> 1. Diagnose and understand the natural history and management principles of whiplash and soft tissue injury. 2. Recognize the broad categories of spinal pain and radiculopathy: 3. The signs and symptoms (including cauda 289alfor syndrome). 4. Their common causes, their diagnosis and their management (cervical and lumbar disc herniation, osteoarthritic disease, spondylolisthesis). 5. Their differential diagnosis and management (including metastatic disease and primary spinal tumors). 6. Recognize the broad categories of myelopathy: 7. The signs and symptoms (including comparison of acute and chronic spinal cord injury). 8. 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).
6. Diagnosis and Management of Hydrocephalus and Spinal Dysraphism	<ol style="list-style-type: none"> 1. Recognize the symptoms and signs of hydrocephalus in children. 2. Recognize the symptoms and signs of hydrocephalus in adults. 3. Understand common etiologies of hydrocephalus in children and adults, and differentiate between communicating and obstructive hydrocephalus. 4. Understand treatment strategies for hydrocephalus. 5. Recognize common syndromes of spinal dysraphism, their neurologic manifestations and broad principles of management. 6. understand the physiology of cerebrospinal fluid, production, circulation and absorption. 7. know the normal biochemical constituents of the CSF and interpret the pathological changes.
8. Congenital CNS malformation	<ol style="list-style-type: none"> 1. to know the most common congenital malformation of the CNS, like: Arachnoidcyst, chiari 289alformation. 2. understand the presentation of different congenital malformation and their management.
9. Stroke	<ol style="list-style-type: none"> 1. Be able to define stroke and its subtypes 2. Be able to identify risk factors for stroke 3. Identify the major blood vessels in the anterior and posterior circulation and the territories they supply 4. Be able to mention some of the etiologies for ischemic and hemorrhagic strokes 5. Realize the clinical features of stroke in different vascular territories 6. Realize the important role of tissue plasminogen activator (t-PA) in the management of acute stroke and the requirements for its use 7. Realize the major venues of secondary prevention of stroke 8. Realize and be able to prevent the common complications associated with stroke
8. Coma	<ol style="list-style-type: none"> 1. Define concepts of: Coma, lethargy, stupor, alertness. 2. Be familiar with the components of Galscow coma scale. 3. Be familiar with the possible etiologies of coma: supratentorial structural lesions, infratentorial structural lesions, primary neurological diseases that are non-focal, and systemic etiologies of coma. 4. Be able to list the most common causes of coma world wide and in our community. 5. Be able to give a comprehensive differential diagnosis for coma. 6. Be able to point out important aspects of neurological history specific for a comatose patient. 7. Be able to point out important aspects of neurological examination specific for a comatose patient. 8. Be able to stabilize and manage a comatose patient

<p>9. Epilepsy</p>	<ol style="list-style-type: none"> 1. Be able to define the concept of epilepsy and differentiate it from seizures. 2. Recognize the possible etiologies of seizure disorders. 3. Be familiar with the international classification of epilepsies and seizure disorders. 4. Be able to differentiate a simple from a complex seizure. 5. Be able to give a clinical description of the most common types of seizures: Generalized tonic clonic convulsions, absence seizures, and complex partial seizures. 6. Be able to point out important aspects of history and physical examination related to seizure disorders. 7. Be familiar with the important investigation tools for a seizure patient, especially brain MRI and electroencephalography. 8. Be able to give a general outline for managing an epilepsy patient. 9. Be familiar with the major categories of anti-epileptic medications, their indications, and the major side effect of each. This includes: Phenyton, carbamazepine, valproic acid, topiramate, lamotrigine, and levetiracetam
<p>10. Muscle and neuromuscular diseases</p>	<ol style="list-style-type: none"> 1. Be familiar with the general anatomy and physiology of the neuromuscular junction. 2. Be able to give the general symptoms common to most muscle diseases. 3. Be familiar with the major categories of muscle disease: Congenital and acquired. 4. Of the congenital muscle disease, be familiar with: Duchenne muscular dystrophy, Myotonic dystrophy and Emory Dreifuss muscular dystrophy. 5. Of the acquired myopathies, be familiar with: polymyositis, dermatomyositis, inclusion body myositis, thyroid myopathy, and medication induced myopathies. 6. Be able to outline the major specific investigations and management for a muscle disease patient. 7. Be familiar with myasthenia gravis as the most important disease of the neuromuscular junction. 8. Be able to give the clinical features of myasthenia gravis. 9. Be familiar with specific investigations for a myasthenic patient. 10. Be able to give a major outline for managing myasthenia gravis.
<p>11. Multiple Sclerosis</p>	<ol style="list-style-type: none"> 1. Be familiar with the basic histology of a nerve cell and axon, including the process of myelination. 2. Be familiar with multiple sclerosis as the major CNS disease characterized by nerve cell demyelination. 3. Be able to give the major clinical features of multiple sclerosis. 4. Be familiar with the diagnostic tools and criteria for multiple sclerosis. 5. Be able to give the major findings on MRI and lumbar puncture in MS patients. 6. Be familiar with the treatment of multiple sclerosis relapses. 7. Be familiar with the disease modifying agents in multiple sclerosis: Interferon Beta 1a and Interferon beta 1b, as well as copaxone. 8. Be familiar with the symptomatic treatment of MS.
<p>12. Motor Neuron Disease</p>	<ol style="list-style-type: none"> 1. Understand the difference between upper and lower motor neuron disease (MND) 2. Be able to classify MNDs 3. Describe the clinical features seen in ALS 4. Be able to describe the major investigations done in the work up of ALS patients 5. Be able to diagnose ALS using a constellation of clinical and laboratory tools 6. Be able to differentiate ALS from other mimicking illnesses

13. Neuropathies	<ol style="list-style-type: none"> 1. Understand the different terms used in the description of nerve diseases 2. Be able to classify neuropathies into different categories 3. Understand the signs and symptoms seen in neuropathy patients 4. Be able to give examples on different etiologies for neuropathy 5. Realize the differences in presentation between hereditary and acquired neuropathies 6. Realize the clinical features of the major acquired and hereditary neuropathies 7.
14. Movement disorders	<ol style="list-style-type: none"> 1. To define symptoms of movement disorders 2. To know classification schemes of movement disorders 3. To discuss genetics of movement disorders 4. To know treatment principles of certain diseases e.g. Parkinson's disease, Wilson's disease, Primary dystonia, Tourette's syndrome)
15. CNS emergencies	<ol style="list-style-type: none"> 1. To list pathogens causing acute & subacute meningitis & brain abscess 2. To discuss pathogenesis & pathology of meningitis 3. To understand clinical presentation & laboratory evaluation of meningitis 4. To know treatment principles of meningitis & brain abscess 5. To discuss treatment principles of status epilepticus 6. To discuss clinical presentation of neuromuscular emergencies (GBS, myasthenic crisis) 7. To know treatment principles of neuromuscular emergencies 8. To know clinical presentation & treatment principles of cord compression
16. Localization in neurology	<ol style="list-style-type: none"> 1. To review anatomy of major tracts (e.g. pyramidal tract, spinothalamic tract) 2. To review blood supply of brain 3. To discuss signs & symptoms of upper & lower motor neuron lesions 4. To discuss localization principles of upper motor neuron disorders (e.g. spinal cerebral hemisphere, brainstem) 5. To discuss localization principles of lower motor neuron disorders (e.g. nerve plexus)
17. Headache	<ol style="list-style-type: none"> 1. To understand classification scheme of headache 2. To discuss the clinical presentation, pathophysiology, and diagnostic tests of different primary headache disorders (e.g. migraine, cluster & tension headache) 3. To recognize ominous causes of headache. 4. To review treatment principles of headache

Fifth Year Medical Students Bi-Weekly Schedule (2009-2010)

	Didactics/Activity 8:00-8:45	Morning Teaching 9:30-12:30	Didactics/Activity 2:00-4:00
Sun	Neuro Exam		
Mon	Peripheral Neuropathy (NP)		Movement disorders
Tue	History and clinical exam		Head injury, Spine injury
Wed	History and clinical exam		Disc Disease
Thu	Multiple Sclerosis		S.A.H
Sun	Epilepsy		
Mon			Dementia (NP)
Tue			CNS Tumors
Wed	History and clinical exam		Congenital anomalies
Thu	Headache		

- Groups are divided into A and B groups.
- Whenever groups are not assigned, all students are expected to show up.
- Students are expected to be in the hospital from 8 am to 4 pm.
- Failure to attend any of the teaching rounds or clinics will be counted as one-day abstinence.
- Failure to attend any of the other activities will be counted as one-day abstinence for every two of them.
- Showing up late for more than 5 minutes for any activity will be considered no show, and for less than 5 minutes should be justified, admission to the activity will be up to the teaching staff.
- NP indicates clinical teaching starts in the neurophysiology lab conference room.
- Study subjects include, but are not limited to, topics covered in Didactics.
- **In case one or more teaching staff is on vacation, or during major holidays, this schedule will be modified, in which case the substitute schedule will have specific dates on the top. Otherwise, this schedule above is applicable.**



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Special Surgery

A)Basic Information

- 1. Course title: Orthopedics/Traumatology**
- 2. Specialty: M.B.B.S. program**
- 3. Department offering the course: Special Surgery**
- 4. Academic year: Second semester Fifth year**
- 5. Date of specification approval: Department council date:**
- 6. Internal Evaluator :Prof . Dr. -----**
- 7. Allocated marks: 100 marks.**
- 8. Course duration: 2 weeks of teaching.**
- 9. Course Code: MED526**
- 10. Credit Hours: 2.25 Credits**

B)Professional Information:

COURSE DESCRIPTION:

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

GENERAL OBJECTIVES:

By the end of this course, students are expected to:

1. To take proper history and perform physical examination
2. To investigate patients with orthopedic disorders.
3. To know types of fractures, their classifications, and complications.
4. To know a wide spectrum of orthopedic diseases

METHODS OF INSTRUCTION:

- _ Morning report.
- _ Seminars.
- _ Bed-side teaching.
- Outpatient clinics.

III. EVALUATION AND DISTRIBUTION OF MARKS:

- In-course evaluation = 20%
- Final clinical exam. = 40%
- Final written exam. = 40%

IV. RECOMMENDED TEXT BOOKS:

Adam's: Outline of orthopedics.

Adam's: Outline of fractures.

Apply's: System of orthopedics.

MacRae's: Clinical evaluation.

Malkawi : Principles of Disorders and Injuries of the Musculoskeletal system.

Title	OBJECTIVES
1. Introduction to orthopedics and principles of fractures.	<ul style="list-style-type: none">○ How to take a proper history and to do physical examination.○ To identify the general investigations of orthopedics.○ To know the principles of orthopedic X-Ray.○ Diagnose different types of fractures.-○ Classify fractures.-○ To identify the mechanism of fractures.-○ Outline treatment of fractures.
2. Bone and Joint Infections	<ul style="list-style-type: none">○ Define Osteomyelitis and Septic Arthritis○ Identify the signs and symptoms of bone and joint infections.○ Understand the pathogenesis.-○ Investigations in use.-○ Outline the treatment ways.
3. Hip disorders and Developmental Dysplasia of the Hip (DDH).	<ul style="list-style-type: none">○ Outline the etiological theories.○ Demonstrate the clinical skills necessary for clinical diagnosis.○ Enumerate possible complications.○ Introduction to different imaging studies.○ Outline treatment measures
4. Knee Problems	<ul style="list-style-type: none">○ How to examine the Knee.○ Classify Knee Disorders.○ Identify swellings around the knee.○ Investigations of knee disorders.○ Outline treatment modalities of knee disorders.
5. Hand.	<ul style="list-style-type: none">○ Understand important anatomical aspects.-○ Diagnose hand deformities.(Congenital and Acquired)○ Identify hand infections.○ Identify hand functions.○ Investigate hand pathologies○ Outline the treatment principles for hand

	problems.
6. Spine	<ul style="list-style-type: none"> ○ Examine the spine. ○ Classify spinal disorders. ○ High light the importance of neurological findings. ○ Investigate spinal disorders. ○ Treatment plan for different spinal disorders.
7. Shoulder and elbow joints	<ul style="list-style-type: none"> ○ Demonstrate clinical skills in finding abnormal signs. ○ Classify shoulder and elbow disorders. ○ Investigate disorders of these joints. ○ Plan treatment protocols for disorders affecting these joints
8. Ankle and Foot	<ul style="list-style-type: none"> ○ Demonstrate clinical skills in finding abnormal signs. ○ To know the normal gait and stand. ○ Investigate disorders of the ankle and foot. ○ To diagnose and classify the disorders. ○ To treat the most common disorders of the area.
9. Complications of fractures	<ul style="list-style-type: none"> ○ To know the early general and local complications. ○ To know the late complications. ○ How to diagnose the complications. ○ How to treat the complications

Weekly Teaching activities including lecture, laboratory , interactive case , seminars etc

WEEK I

SUNDAY	Monday	TUE	wed	THURSDAY
8-9 morning report	8-9 morning report	8-9 morning report	8-9 morning report	8-9 morning report
9-10 round or out patient clinic	9-10 round or out patient clinic	9-10 round or out patient clinic	9-10 round or out patient clinic	9-10 round or out patient clinic
10-11 round or out patient clinic	10-11 round or out patient clinic	1011 round or out patient clinic	10-11 round or out patient clinic	1011 round or out patient clinic
11-12 :30 Seminar	11-12 :30 seminar	11-12 :30 seminar	11-12 :30 seminar	11-12 :30 seminar
12:30 – 2 lunch break	12:30 – 2 lunch break	12:30 – 2 lunch break	12:30 – 2 lunch break	12:30 – 2 lunch break
2-4 bed-side teaching	2-4 bed-side teaching	2-4 bed-side teaching	2-4 bed-side teaching	2-4 bed-side teaching round

round	round	round	round	
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WEEK 2

SUNDAY	Monday	TUE	wed	THURSDAY
8-9 morning report	8-9 morning report	8-9 morning report	8-9 morning report	Examination
9-10 round or out patient clinic	9-10 round or out patient clinic	9-10 round or out patient clinic	9-10 round or out patient clinic	Examination
10-11 round or out patient clinic	10-11 round or out patient clinic	10-11 round or out patient clinic	10-11 round or out patient clinic	Examination
11-12 :30 seminar	11-12 :30 seminar	11-12 :30 Seminar	11-12 :30 seminar	Examination
12:30 – 2 lunch break	12:30 – 2 lunch break	12:30 – 2 lunch break	12:30 – 2 lunch break	Examination
2-4 bed-side teaching round	2-4 bed-side teaching round	2-4 bed-side teaching round	2-4 bed-side teaching round	Examination



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Ophthalmology Department

A)Basic Information

1. **Course title: Ophthalmology**
2. **Specialty: M.B.B.S. program**
3. **Department offering the course: Special Surgery**
4. **Academic year: Second semester Fifth year**
5. **Date of specification approval: Department council date:**
6. **Internal Evaluator :Prof . Dr. -----**
7. **Allocated marks: 100 marks.**
8. **Course duration: 2 weeks of teaching.**
9. **Course Code: MED527**
10. **Credit Hours: 2.25 Credits**

B)Professional Information:

Course description:

Ophthalmology course is a two weeks rotation for 5th year medical students. During this course the student attends daily clinical round in the ward. They participate in seeing patients in the clinics. Seminars on common ophthalmology disease are given in the afternoon. By the end of the course, the student should be familiar with basics in ophthalmology and aware of the common ophthalmic disorders and conditions. Throughout the course, students will be involved in the clinical rounds and consults, outpatient clinics and interactive seminars.

Ophthalmology course is a two weeks rotation for 5th year medical students. During this course the student will have daily clinical round that could be in the clinic or the ward as well as a seminar in the afternoon. By the end of the course, the student should be familiar with basics in ophthalmology and aware of the common ophthalmic conditions

Course objectives:

General

To introduce the student to the basic concepts in ophthalmology and the get him familiar with common ophthalmic disorders

Specific

Unit	Topic	Objective
	Introduction	History taking, eye examination, ophthalmic tests
	Strabismus	Types of squint, presentation, management
	Trauma	Approach, signs, management, complications
	Cornea/Refractive errors	Types of keratitis, management of keratoconus, types and management of refractive errors
	Cataract/ Eye & systemic diseases	Types, presentation and management of cataract. Ocular manifestations of systemic diseases
	Eyelids/Orbit	Overview of eyelid and orbit diseases
	Glaucoma/Neurophthalmic disorders	Approach t glaucoma pts, common neurophthalmic disorders

	Acute and gradual loss of vision	DDx of acute and gradual vision loss, approach and management
	Retinal disorders	Approach and management of retinal disorders

Teaching activities:

	Sunday	Monday	Tuesday	Wednesday	Thursday
9-12	Round	Round	Round	Round	Round
1:30-3:30	Seminar	Seminar	Seminar	Seminar	Seminar

Seminar schedule

Week 1	
Sunday	Introduction
Monday	Strabismus
Tuesday	Trauma
Wednesday	Cornea/Refractive errors
Thursday	Cataract/ Eye & systemic diseases
Week 2	
Sunday	Eyelids/Orbit
Monday	Glaucoma/Neurophthalmic disorders
Tuesday	Acute and gradual loss of vision
Wednesday	Retinal disorders

Methods of assessment:

Evaluation and seminar: 20%

End of rotation exam (slides with short assay): 40%

Final Exam (MCQs): 40%

Recommended text book and suggested readings:

1. Lecture notes in ophthalmology
2. Kanski clinical ophthalmology



**21 Sep. University for Medical and Applied Sciences
Faculty of Medicine
Department of Clinical Radiology.**

A) Basic Information

- 1. Course title: Clinical Radiology**
- 2. Specialty: M.B.B.S. program**
- 3. Department offering the course: Special Medicine**
- 4. Academic year: Second semester Fifth year**
- 5. Date of specification approval: Department council date:**
- 6. Internal Evaluator : Prof . Dr. -----**
- 7. Allocated marks: 100 marks.**
- 8. Course duration: 2 weeks of teaching.**
- 9. Course Code: MED528**
- 10. Credit Hours: 2.25 Credits**

B) Professional Information:

Course description:

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

1- General objectives:

By the end of this course, students are expected to:

- 1- Be familiar with common radiological exams and procedures.
- 2- Know indications and contraindications of different radiological exams.
- 3- Be familiar with basic radiological anatomy.
- 4- Be able to identify and diagnosis common and emergency pathological conditions using different radiological modalities.

II. Method of Instruction.

- Tour in different sections of the radiology department.
- Seminars.
- Lectures.

III. Evaluation and distribution of marks

1. In-course evaluation: 10%
2. Final clinical exam: 50% (end rotation).
3. Final written exam: 40% (final exam)

IV: Recommended textbooks

1. Blueprint radiology.
2. Radiology for medical student.
3. Lecture notes on radiology.
4. Clinical medicine (Kumar and Clark)

NO	TOPIC	OBJECTIVES
	Introduction radiology	<ol style="list-style-type: none"> 1. Review the basic concepts of radiation and its different types. 2. Review the sources of photons (x and gamma rays) and its interaction with matter 3. Review the principles of radiobiology and radiation protection. 4. Show example of different radiological modalities and discuss possible indications.
	Chest radiology	<ol style="list-style-type: none"> 1. Describe different modalities used to evaluate chest pathology. Introduce the student to chest radiological anatomy. 2. Expose the student to example of urgent and common chest pathology seen on chest X-ray.
	Neuro-radiology	<ol style="list-style-type: none"> 1. Review the radiological anatomy of central nervous system. 2. Discuss the indication for different imaging modalities in neuro-radiology. 3. Discuss the appearances of basic pathological processes on CT and MRI. 4. Show example of common and emergency pathology on CT and MRI.
	Uro-Radiology	<ol style="list-style-type: none"> 1. Explain the radiological modalities used to investigate urological problems. 2. Show examples of common pathological entities on different radiological exams.
	Gastro-intestinal radiology	<ol style="list-style-type: none"> 1. Discuss the radiology modalities used to investigate GI problems and their indication. 2. Show examples of common pathological entities.
	Musculoskeletal radiology	<ol style="list-style-type: none"> 1. General radiological anatomy. 2. MRA of joints & bones. 3. Common pathology of bones & joints.
	Mammogram	<ol style="list-style-type: none"> 1. Anatomy breast 2. Benign & malignant disease. 3. Interventional.
	Pediatric radiology	<ol style="list-style-type: none"> 1. General common congenital disease.
	Miscellaneous	1.3 Radiologist teaching common radio-pathology.
	Nuclear medicine	<ol style="list-style-type: none"> 1. Introduce the medical students to the concept of nuclear medicine and its application. 2. Show example of normal exams of different nuclear medicine tests and some pathological entities.



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Internal Medicine

A)Basic Information

- 1. Course title: General Internal Medicine II**
- 2. Specialty: M.B.B.S. program**
- 3. Department offering the course: Department of Internal Medicine**
- 4. Academic year: First semester Sixth year**
- 5. Date of specification approval: Department council date:**
- 6. Internal Evaluator :Prof . Dr. -----**
- 7. Allocated marks: 450 marks.**
- 8. Course duration: 8 weeks of teaching.**
- 9. Course Code: MED611**
- 10. Credit Hours: 9 Credits**

B)Professional Information:

A. Course description:

This is a general internal medicine for final year medical students during which will advance their skills in the field of internal medicine. Students are expected to cover core medical problems (attached) through daily bed side teaching rounds and attending specialty outpatient clinics. Throughout the course students will have interactive seminars that cover a wide variety of common and important medical problems. Students are also expected to participate in the weekly educational activities of the department (attached)

B. General Objectives

1. Interview patients and perform a complete and focused physical examination
2. Consolidate their knowledge of abnormal physical findings
3. Perform analysis of clinical and laboratory information
4. Improve their presentation skills in describing the chief problems and a plan for treatment.
5. In-house calls and prepare a complete history and physical examination for new patient admitted to the service
6. Periodically follow up patients' status including interpretation of new findings
7. Use and interpret laboratory and radiographic tests used in diagnosing common disease (able to read chest radiograph, EKG, spirometry, blood film,etc...)
8. Recognize and manage situations related to common emergencies
9. Identify ethical problems which arise in patient treatment and care

C. Methods of Instruction

1. Direct patient contact
2. Bedside clinical teaching
3. Outpatient clinic
4. In-house call
5. Interactive seminars

KAUH	Weeks 1-3		Morning Report	Interviewing Patients	Bedside Teaching	Seminars
		Sunday	8:15 – 9:00	9:00 – 10:00	10:00 – 12:00	13:00 – 14:00
		Monday	8:15 – 9:00	9:00 – 10:00	10:00 – 12:00	13:00 – 14:00
		Tuesday	8:15 – 9:00	9:00 – 10:00	10:00 – 12:00	---
		Wednesday	8:15 – 9:00	9:00 – 10:00	10:00 – 12:00	---
	Thursday	8:15 – 9:00	9:00 – 10:00	10:00 – 12:00	13:00 – 14:00	
	Week 4		Outpatient Specialty Clinic			Seminars
		Sunday	8:30 – 12:00			13:00 – 14:00
		Monday	8:30 – 12:00			13:00 – 14:00
		Tuesday	8:30 – 12:00			---
Wednesday		8:30 – 12:00			---	
Thursday	8:30 – 12:00			13:00 – 14:00		
PRMH	Weeks 5-8		Interviewing Patients	Bedside Teaching	Seminars	
		Sunday	8:15 – 10:00	10:00 – 12:00	13:00 – 14:00	
		Monday	8:15 – 10:00	10:00 – 12:00	13:00 – 14:00	
		Tuesday	8:15 – 10:00	10:00 – 12:00	---	
		Wednesday	Mini OSCE Exam			
Thursday	OSCE Exam					

D. A typical 8-week rotation schedule:

E. Core Curriculum in Internal Medicine:

- 1 Bronchial Asthma
- 2 Chronic obstructive lung disease
- 3 Lung cancer
- 4 Pneumonia
- 5 Pleural effusion
- 6 Venous thromboembolism
- 7 Acute coronary syndrome
- 8 Heart failure
- 9 Arrhythmias
- 10 Hypertension
- 11 Acute renal failure
- 12 Chronic renal failure
- 13 Nephrotic syndrome
- 14 Urinary tract infection
- 15 Upper GI bleeding
- 16 Inflammatory bowel disease
- 17 Infectious hepatitis
- 18 Liver cirrhosis
- 19 Malabsorption
- 20 Peptic ulcer disease
- 21 Anemias
- 22 Lymphomas
- 23 Leukemias
- 24 Hemoglobinopathies
- 25 Diabetes mellitus
- 26 Hypothyroidism
- 27 Thyrotoxicosis
- 28 Cushing's syndrome
- 29 Systemic lupous erythematosus
- 30 Rheumatoid arthritis
- 31 Gout arthritis

- 32 Behcet's disease
- 33 Familial Mediterranean Fever
- 34 Tuberculosis
- 35 Sepsis

F. Specific Objectives:

CLINICAL EPIDEMIOLOGY/MEDICAL REASONING

- A. Describe phases of clinical reasoning
 - 1. Defining the “clinical problem”
 - 2. Generating a differential diagnosis
 - 3. Ordering of appropriate investigations to narrow down the list of differential diagnosis
 - 4. Planning for treatment and prevention of disease
- B. Define:
 - 1. Prevalence
 - 2. Sensitivity
 - 3. Specificity
 - 4. False negative rate
 - 5. False positive rate
 - 6. Negative predictive value (NPV) and positive predictive value (PPV)

CARDIOVASCULAR SYSTEM

I. Knowledge/Mix of Diseases/Patients

- A. Ischemic heart disease and myocardial infarction including practice guidelines for the management of unstable angina. Recognize RV infarct, MI complications
- B. Congestive heart failure practice guidelines. Systolic vs diastolic
- C. Congenital heart disease which may occur in adults
- D. Valvular heart disease—causes
- E. Clinical diagnosis of rheumatic fever
- F. Cardiomyopathies
- G. Pericardial disease
- H. Hypertension: essential and secondary

I. Arrhythmias

- 1. Distinction between ventricular and supraventricular arrhythmias
- 2. Atrial fibrillation, atrial flutter, SVT and MAT
- 3. Heart block 1^o, 2^o, 3^o
- 4. Bundle branch and hemiblocks

II. History Skills

- A. Obtain history of risk factors for coronary artery disease
- B. Obtain history for rheumatic fever or congenital heart disease
- C. Recognize importance of family history in assessment of cardiovascular disease
- D. Differentiate between cardiac and non-cardiac chest pain
- E. In hypertensive patient, obtain careful history of medication compliance

III. Physical Exam Skills

- A. Measure arterial blood pressure in both arms using palpation method initially. Know how to avoid all common errors in blood pressure measurement
- B. Determine heart size by palpation of the PMI
- C. Appreciate the significance of abnormal pulsations, right and left ventricular heave, thrills
- D. Determine venous pressure by examination of neck veins
- E. Assess arterial pulses and recognize pulsus alternans, bisferiens pulse, and paradoxical pulse
- F. Perform hepatojugular reflux test to assess venous pressure
- H. On cardiac auscultation, recognize:
 - 1. S-1, S-2, and normal physiologic splitting
 - 2. S-3, S-4, and how they are best appreciated
 - 3. Systolic and diastolic murmur--effects of physiologic and pharmacologic interventions
 - 4. Special characteristics of the murmur of MVP and HCM
 - 5. Pericardial friction rub
- I. Assessment of peripheral vascular disease.

IV. Diagnostic Tests

- A. EKG interpretation
- B. Chest X-ray--recognize classical findings in HF, pericardial effusion, chamber enlargement
- C. Echocardiography--Be able to order when appropriate in evaluation of valvular heart disease, LVH, cardiomyopathy, endocarditis, pericardial effusion

V. Therapeutic Interventions

- A. Know therapeutic indications for angioplasty and other therapeutic applications of catheterization
- B. Describe therapeutic approach to clinical syndromes described in I. Emphasize particularly
 - 1. Indications for thrombolytic therapy in MI
 - 2. Contraindications for thrombolytic therapy in MI
 - 3. Analgesia, oxygen, and sedation
 - 4. Role of ASA, anticoagulation, Beta blockers, magnesium
 - 5. Recognize and treat complications of MI including ventricular tachycardia and fibrillation, idioventricular rhythm, sinus bradycardia, conduction disturbances and heart block.
 - 6. Know how to use common drugs for angina pectoris including types of nitrates, Beta blockers and calcium channel blockers.
 - 7. Understand all modalities in the management of CHF including reduction of workload, control of salt and fluid, diet, diuretic vasodilators and digoxin. Use additional options in acute pulmonary edema.
 - 8. Describe drugs of choice for bradyarrhythmias and tachyarrhythmias
 - 9. Know the approach to acute pericarditis and evaluation of the patient with possible tamponade

VI. Prevention of Cardiac Disease

- A. Have plan of intervention for hyperlipidemia
- B. Approach patient with options for cessation of cigarette smoking
- C. Be able to advise patient on diet, exercise program, and stress reduction
- D. Identify patients who are at highest risk
- A. EKG interpretation
- B. Chest X-ray--recognize classical findings in congestive heart failure, pericardial effusion, chamber enlargement
- C. Echocardiography--Be able to order when appropriate in evaluation of valvular heart disease, LVH, cardiomyopathy endocarditis, pericardial effusion
- E. Know all antibiotic regimens for prophylaxis of endocarditis in at-risk patients

Clinical Pharmacology

I. Knowledge

- A. Principles of drug therapy
 - 1. Loading and maintenance dosing
 - 2. Calculate creatinin clearance
 - 3. Drug interaction lists (particularly coumadin, theophylline, dilantin, digoxin)
- B. Adverse reactions
 - 1. Endocrine, metabolic, dermatologic, hematologic, renal, cardiovascular, neurologic and psychiatric, GI
 - 2. Polypharmacy and the elderly
- C. Action and side effects of nonsteroidals (NSAIDs)
- D. Indications and physiologic effects of autonomic drugs (adrenergic, dopaminergic, alpha and beta blocking agents)

II. History Skills

- A. Ability to take careful drug history
- B. Assess compliance
- C. History of herbal use

III. Physical Exam

- A. Recognize drug rashes
- B. Recognize Stevens Johnson syndrome
- C. Recognize angioedema, gingival hyperplasia, dental discoloration
- D. Evaluate and categorize mental status changes associated with drug effects

IV. Diagnostic Tests

- A. Interpret peak and trough levels of aminoglycoside and vancomycin
- B. Appropriate use of digoxin levels
- C. Drug screens – indications

V. Therapeutic Interventions

- A. Treatment of drug toxicities and overdose
 - 1. Fundamentals
 - 2. Management of specific poisons - acetaminophen, acids and alkali, salicylate, carbon monoxide, digoxin, theophylline, methemoglobinemia, lithium

Diseases Of The Kidney And Urinary Tract

I. Knowledge/Mix of Diseases/Patients

- A. Acute renal failure--The student must distinguish prerenal, renal, and post renal disease using clinical and laboratory parameters
- B. Chronic renal failure and its associated metabolic-endocrine, GI, cardiovascular hematologic, and neuromuscular complications
- C. The major glomerulopathies including acute GN, rapidly progressive GN, GN associated with nephrotic syndrome, and glomerulopathies associated with multisystem disease
- D. Tubulointerstitial disease
- E. Vascular injury
- F. Causes of renal stones--associated underlying diseases

II. History Skills

In the patient who presents with a problem of the urinary tract, the student will determine by history:

- A. Frequency and volume of urine (polyuria, oliguria, anuria)
- B. Urine color, hematuria
- C. Dysuria, diminished stream
- D. Family history of renal disease or stones
- E. Past history of stones or urinary tract infection
- F. Flank or groin pain
- G. History of nephrotoxic drugs or drugs that effect bladder emptying or urine color
- H. Recognize the clinical syndrome of uremia

III. Physical Exam Skills

- A. Recognize signs of uremia--cognitive, asterixis, odor of breath
- B. Auscultate for bruits
- C. Attempt to palpate for kidneys
- D. Percuss bladder size
- E. Recognize any signs of multisystem disease as might be seen in SLE and scleroderma, Schonlein-Henoch purpura, PAN

IV. Diagnostic Tests

- A. The student should be able to:
- B. Calculate fractional excretion of sodium as a measure of prerenal vs post renal azotemia
- C. Evaluate the patient with glomerulonephritis for multisystem disease
- D. Choose the most appropriate imaging test for the specific patient problem

V. Therapeutic Interventions

The student should be able to:

- A. Manage the patient with acute renal failure and know all indications for dialysis
- B. Recognize the possibility of urinary tract obstruction and perform urethral catheterization using sterile technique
- C. Recognize the indications for consultation for performance of peritoneal and hemodialysis, lithotripsy or stone surgery, nephrostomy tube, renal vascular surgery, suprapubic cystotomy, renal transplantation

Disorders Of The Respiratory System

I. Knowledge/Mix of Diseases/Patients

- A. Diseases of Airflow Limitation
 - 1. Asthma
 - 2. Bronchitis
 - 3. Emphysema
 - 4. Bronchiectasis
 - 5. Cystic fibrosis
- B. Interstitial Lung Diseases
 - 1. Occupational lung disease
 - 2. Hypersensitivity pneumonias
 - 3. Sarcoidosis
 - 4. Idiopathic pulmonary fibrosis
- C. Infectious Lung Diseases
 - 1. Community acquired pneumonia
 - 2. Nosocomial pneumonias
 - 3. Mycotic lung diseases
 - 4. Tuberculosis
- D. Pulmonary Vascular Lung Diseases
 - 1. Pulmonary thromboembolism
 - 2. Pulmonary hypertension
 - 3. Noncardiogenic pulmonary edema (ARDS)
- E. Neoplastic Disease of the Lung
 - 1. Bronchogenic carcinoma
 - 2. Paraneoplastic syndromes
- F. Diseases of the Pleura
 - 1. Pleural effusion
 - 2. Pneumothorax

II. History Skills

- A. Correctly characterize respiratory symptoms of dyspnea, cough, and expectoration
- B. Obtain careful history of accidental or occupational exposure to potential lung toxins
- C. Obtain a precise history of tobacco use, including passive cigarette smoke
- D. Obtain family history for cystic fibrosis, emphysema, asthma, tuberculosis, collagen vascular diseases, and lung neoplasm
- E. Obtain history of drug exposure and medication use
- F. Determine risk factors for HIV and TB
- G. Obtain reports of prior pulmonary tests such as CXRs, PFTs, ABGs, and PPD

III. Physical Exam Skills

- A. Examine the chest by inspection
 - 1. Identify abnormal respiratory patterns
 - 2. Recognize findings suggesting pulmonary disease such as deviated trachea, digital clubbing, HPO, and Horner's syndrome
- B. Examine the chest by palpation
 - 1. Appreciate the significance of supraclavicular adenopathy, crepitation, and tenderness
- C. Examine the chest by percussion
 - 1. Distinguish normal and abnormal resonance
 - 2. Further define areas of dullness by special maneuvers such as vocal and tactile fremitus
- D. Examine the chest by auscultation
 - 1. Recognize normal breath sounds and characterize
 - 2. Recognize adventitious breath sounds such as crackles, rhonchi, and wheezes
 - 3. Understand the diagnostic implications of the adventitious sound

IV. Diagnostic Test Skills

- A. The student should be able to:
 - 1. Interpret arterial blood gases including mixed acid base abnormalities

2. Use the A-a gradient to determine the causes of hypoxemia
3. Use the a/A ratio as an expression of patient's ability for gas exchange
4. Understand the use and limitations of the pulse oxymeter
5. Interpret spirometry including Flow-Volume loops
6. Interpret the chemical profile of pleural effusions
7. Utilize the Gram stain, AFB stains, and Wright stain
8. Interpret the standard PA and lateral chest radiograph
- B. The student should understand the indications for:
 1. Pulmonary function tests
 2. Sleep studies
 3. Serology and special immunofluorescent stains
 4. Thoracentesis
 5. Pleural biopsy
 6. Chest tube insertion
 7. Bronchoscopy
 8. Transthoracic needle biopsy
 9. Open lung biopsy
 10. Mediastinoscopy

V. Therapeutic Skills

- A. The student must be familiar with the management of all diseases listed in I.
- B. The student should be able to:
 1. Properly clear and maintain an airway
 2. Perform therapeutic and diagnostic thoracentesis
 3. Teach incentive spirometry
 4. Correctly select antimicrobial agents for respiratory infection
 5. Recognize a significant reaction to PPD
 6. Know the indications and side effects for the commonly used medications in pulmonary medicine

VI. Preventive Measures

- A. The student must recognize the value of:
 1. Immunization with the Pneumovax
 2. Immunization with the influenza vaccine
 3. Prophylactic use of amantadine in influenza outbreaks
 4. Immunization with the BCG vaccine
 5. Measures to prevent the spread of tuberculosis
 6. High risk screening for tuberculosis infection
 7. INH prophylaxis
 8. Low flow oxygen

Endocrinology And Metabolism

I. Knowledge/Mix of Diseases/Patients

- A. Diseases of the pituitary
 1. Diabetes insipidus
 - a. Central
 - b. Nephrogenic
 2. Pituitary tumors
 - a. Acromegaly
 - b. Cushing Disease
 - c. Prolactinoma
 3. Hypopituitarism
 4. Empty Sella Syndrome
- B. Thyroid Disease
 1. Hypothyroidism causes
 - a. Primary hypothyroidism
 - b. Secondary hypothyroidism
 2. Hyperthyroidism
 - a. Graves disease
 - b. Toxic multinodular goiter
 - c. Toxic adenoma
 - d. Factitious
 3. Thyroiditis
 - a. Chronic thyroiditis (Hashimoto's)
 - b. Subacute thyroiditis (painful and painless)

4. Approach to thyroid nodule

C. Diseases of the Adrenal Cortex

1. Cushing Syndrome
2. Hyperaldosteronism
 - a. Primary hyperaldosteronism
 - b. Secondary hyperaldosteronism
3. Addison's Disease
4. Hypoaldosteronism
5. Incidental adrenal mass
6. Congenital adrenal hyperplasia (classical and non-classical)

D. Pheochromocytoma

E. Diabetes mellitus

1. Diagnosis
2. Classification and pathogenesis
3. Clinical features
4. Complications
 - a. DKA
 - b. Hyperosmolar coma
 - c. Vascular disease
 - d. Ocular
 - e. Nephropathy
 - f. Neuropathy (somatic and autonomic)
 - g. Foot ulcers
 - h. Other infections
5. Treatment
 - a. Diet
 - b. Insulin
 - c. Oral agents
 - d. HTN Rx

F. Hypoglycemia

1. Fasting
 - a. Insulinoma vs. factitious
2. Reactive

G. Testicular function

1. Primary hypogonadism
 - a. Klinefelter's
2. Secondary hypogonadism
 - a. Pituitary tumor
 - b. Hyperprolactinemia
3. Pubertal development
 - a. Delayed puberty
 - b. Cryptorchidism

H. Disorders of ovary and female genital tract

1. Hirsutism and virilization
2. Amenorrhea/galactorrhea (hyperprolactinemia)
3. Estrogen replacement

I. Multiple endocrine disorders

- J. Disorders of the parathyroid gland and of calcium metabolism (hyperparathyroidism differential of hypercalcemia, hypocalcemia)

K. Metabolic bone disease

1. Osteoporosis
2. Osteomalacia
3. Paget's
4. Renal osteodystrophy

II. History Skills

A. Demonstrates knowledge necessary to take a proper history for a patient suspected of having an endocrine or metabolic disorder. This might include the special significance of:

1. Growth and development
2. Sexual precocity
3. Menstrual function
4. History of thyroid or other endocrine disorders
5. Family history of diabetes mellitus
6. Obesity

B. In a patient with diabetes mellitus, the Student must obtain and put in chronological order a detailed history of the disease, including all complications, hospitalizations, medications. The history should include history of coma, neuropathy, nephropathy, foot problems, and infections.

III. Physical Exam

A. Know importance of:

1. Weight
2. Height
3. Skeletal proportions

B. Recognize exophthalmus and abnormal ocular motility

C. Evaluate thyroid size, nodularity, tenderness, and bruit

D. Evaluate skin-temperature, moisture, pigmentation, lesions, such as acne, pretibial myxedema, diabetic dermopathy, and necrobiosis

E. Evaluate quality of voice

F. Evaluate texture and pattern of hair

G. Recognize gynecomastia and its differential

H. Recognize diabetic retinopathy

IV. Diagnostic Skills

A. Understand the use of thyroid function tests in the diagnosis of thyroid disease and thyroid abnormalities in non-thyroidal diseases

1. TSH

2. I^{123} uptake

3. Thyroid scan

B. Clinical circumstances for the use of the following tests:

1. Water deprivation

2. Growth hormone suppression by glucose

3. Dexamethasone suppression

4. ACTH stimulation

5. PRA, aldosterone

6. Prolactin, LH, FSH, ACTH

7. Vitamin D and related metabolites

8. Serum catecholamines (clonidine stimulatix)

9. Cortisol

10. DHEA - sulfate

11. Testosterone

12. 17 OH progesterone

C. Urinary

1. Hydroxysteroids/urine free corticoid

2. Pregnancy test

3. Metanephrine, VMA

4. 5-hydroxy indoleacetic acid

D. Describe the tests necessary to diagnose diseases listed in I.

V. Therapeutic Interventions

A. Understand the indications, side effects, adverse reactions and approach to follow-up for each of the following:

1. ACTH

2. L-thyroxine

3. Cortisones

4. Testosterone
 5. Vasopressin
 6. Antithyroid drugs
 7. Oral hypoglycemics
 8. Insulin (all forms)
 9. Glucagon
 10. Bromocriptine
 11. Hypolipidemic agents
- B. Recognize the need for consultation for the following:
1. Transsphenoidal hypophysectomy
 2. Partial thyroidectomy
 3. Adrenalectomy
 4. Parathyroid exploration and resection

Gastroenterology

I. Knowledge/Mix of Diseases/Patients

- A. Diseases of the esophagus: anatomic and motor causes of esophagitis
- B. Peptic ulcer and gastritis role of Helicobacter, Zollinger Ellison syndrome
- C. Neoplasms of the esophagus and stomach
- D. Disorders of absorption
- E. Inflammatory bowel disease
- F. Diseases of the large and small bowel
- G. Liver and biliary tract disease
 1. Acute and chronic hepatitis
 2. Cirrhosis and alcoholic liver disease
 3. Infiltrative disease of the liver
 4. Diseases of the gallbladder
- H. Pancreatic diseases
 1. Acute pancreatitis
 2. Chronic pancreatitis
 3. Pancreatic cancer
 4. Endocrine tumors

II. History Skills

In obtaining history from a patient with a GI complaint:

- A. Describe all characteristics of abdominal pain
- B. Recognize potential importance of family history (CA, polyposis, etc.), medication history and GI side effects of all drugs
- C. History of diet, weight, food intolerance, bowel pattern, and bleeding
- D. Compare and contrast history of inflammatory bowel disease vs. irritable bowel syndrome
- E. In inflammatory bowel disease, determine length of illness and risk of cancer
- F. In alcoholic patient, determine length and quantity of alcohol. Include all aspects of potential impact of alcohol on health
- G. In both GI patients and liver disease patients, obtain careful drug history, including over counter drugs and careful history of exposure and toxins
- H. Precise history taking in GERD and dysphagia

III. Physical Exam Skills

- A. Students must do complete exam of abdomen and rectal exam including:
 1. General observation including abdominal contour, nodules, scars, striae, venous pattern
 2. Auscultation for bowel sounds and bruits
 3. Light and deep palpation
 4. Percussion for liver size
 5. Percussion in Traube's space to evaluate for splenomegaly
 6. Palpation for spleen
- B. Recognize need for additional physical exam maneuvers such as:
 1. Shifting dullness and fluid wave when ascites is suspected
 2. Murphy's sign for right upper quadrant pain or tenderness
 3. Liver scratch test when percussion is equivocal or cannot be done

4. Eliciting signs of peritonitis
5. Check inguinal area for masses and hernia
6. Perform rectal digital exam and check for fecal blood

IV. Diagnostic Studies

- A. Know indications for and properly perform paracentesis and placement of nasogastric tube
- B. Properly interpret the following laboratory tests:
 1. Serologic studies for hepatitis
 2. Liver function tests
 3. Stool electrolytes and osmolality
 4. Serum B₁₂
- C. The student should know sensitivity and specificity of imaging modalities for diseases in I. including:
 1. Radionucleotide scan of liver
 2. Abdominal ultrasound & CT scan
 3. Upper, lower GI barium studies
 4. Esophagoscopy, gastroscopy and colonoscopy
 5. Small bowel biopsy
 6. Endoscopic retrograde cannulation of pancreas and bile duct (ERCP)

V. Therapeutic Skills

- A. Places nasogastric tube for pancreatitis or other GI symptoms
- B. Performs therapeutic paracentesis
- C. Requests appropriate consultation for consideration of the following:
 1. Surgical abdomen
 2. Sclerotherapy or banding for esophageal varices
 3. Control of GI bleed
 4. Bowel resection for inflammatory bowel disease
 5. Esophageal dilatation
 6. Portacaval shunt
 7. GI cases where surgical intervention is indicated
- D. The student knows indications, mechanism of action, side effects, interactions and follow-up for the following medications:
 1. Laxatives
 2. Anti-emetics
 3. Bile sequestrants
 4. Anti-diarrheals
 5. Antacids
 6. Pancreatic enzymes
 7. Corticosteroids
 8. H₂ antagonists
 9. Anti-helminthics
 10. PPI's
 11. Prokinetic agents

VI. Preventive Measures

- A. Knows indications for occult blood screening and for periodic colonoscopy in high-risk patients
- B. Knows approach to follow up of the patient with history of polyp disease

Hematology

I. Knowledge/Mix of Diseases/Patients

- A. Pathophysiology of anemia
- B. Anemia of chronic disease
- C. Iron deficiency anemia
- D. Megaloblastic anemia
- E. Hemolytic anemias (congenital and acquired)
- F. Iron overload states
- G. Bone marrow failure
- H. Myeloproliferative disorders

- I. Leukemias (acute and chronic)
- J. Myelodysplastic syndromes
- K. Lymphoma (Hodgkins, non-Hodgkins and plasma cell myeloma)
- L. Clotting disorders
 - 1. Platelet and vessel wall
 - 2. Coagulation and Thrombosis
 - 3. Hypercoagulable state

II. History Skills

- A. Knowing presenting signs of anemia recognizing these to be variable and dependent on severity, chronicity and underlying disease
- B. Recognize dizziness, shortness of breath, headache, exercise tolerance, sensitivity to cold, may be presenting symptoms
- C. Recognize symptoms of angina, claudication, TIA may be unmasked by anemia
- D. Recognize the value of reviewing all previous hematologic lab data in evaluation of hematologic disorders
- E. Recognize symptoms of platelet disorders (spontaneous mucocutaneous bleeding, immediate bleeding with trivial trauma) versus symptoms of clotting-factor deficiency (delayed bleeding, deep muscular hematomas, hemarthroses)
- F. Recognize the importance of "B" symptoms (fever, night-sweats, weight loss) in patients with lymphoma
- G. Recognize the importance of the family history in patients with anemia and coagulation disorders

III. Physical Diagnosis Skills

- A. Recognize ecchymotic or petechial rash
- B. Palpate all lymph node areas, spleen and liver
- C. Check vital signs for tachycardia, postural hypotension, pulse pressure, hyperdynamic precordium, and systolic "flow" murmur
- D. Evaluate tongue, bones and joints
- E. Perform rectal exam with stool for occult blood

IV. Diagnostic Skills

- A. Perform peripheral blood smear on all patients with suspicion of blood disorders
- B. Evaluate:
 - 1. Red blood cell size and shape. Determine if there is variation in red blood cell size
 - 2. Determine platelet count on smear
 - 3. Leucocyte morphology
- C. Identify:
 - 1. Burr cells
 - 2. Helmet cells
 - 3. Target cells
 - 4. Spherocytes
 - 5. Rouleaux formation
 - 6. Hypersegmented polys
 - 7. Reactive lymphocytes
 - 8. Leukemic cells
 - 9. Schistocytes and fragmented RBC's
 - 10. Platelet clumps
 - 11. Nucleated red blood cells
 - 12. Howell-Jolly bodies
 - 13. Basophilic stippling
- D. Know the value of the following tests in the work-up of a patient with hemolytic anemia:
 - 1. Blood smear review
 - 2. Reticulocyte count
 - 3. Coombs test
 - 4. Serum haptoglobin
 - 5. Glucose 6 phosphate dehydrogenase deficiency
 - 6. Hemoglobin electrophoresis
 - 7. Urine hemosiderin
- E. In the evaluation of leukemia recognize the importance of:
 - 1. Leukocyte alkaline phosphatase

2. Auer rods
3. Ph chromosome
4. Flow cytometry: Principles of immunophenotyping
- F. Recognize need to obtain consultation for:
 1. Bone marrow examination
 2. Lymph node biopsy/fine needle biopsy
- G. Know the proper evaluation for bleeding disorder and to diagnosis disseminated intravascular coagulation
- H. Know the principles of:
 1. Bleeding time
 2. Prothrombin time (PT)
 3. Partial Thromboplastin Time (PTT)

V. Therapeutic Interventions

- A. Know the appropriate indications for transfusion of erythrocytes and platelets
- B. Write note to document need in all patients receiving these treatments
- C. Know indications for fresh frozen plasma, cryoprecipitate, and purified factor concentrates
- D. Know mechanism of action, indication side effects, and method of follow-up for each of the following drugs:
 1. Glucocorticoids
 2. Oral and parenteral iron
 3. Folic acid
 4. Vitamin B₁₂
- E. Recognize necessity for consultation with hematologist for the following surgical procedures:
 1. Splenectomy
 2. Staging laparotomy
 3. Bone marrow transplant

VI. Prevention

- A. Diet importance in nutritional anemias
- B. Recognize the need to obtain consultation for genetic counseling in some patients with hemoglobinopathies and hemophilia

Infectious Diseases

I. Knowledge/Mix of Diseases/Patients

- A. Clinical syndromes
 1. Gram-negative sepsis
 2. Infective endocarditis
 3. Upper and lower respiratory infections
 4. Urinary tract infections
 5. Infectious arthritis and osteomyelitis
 6. Sexually transmitted disease
 7. Soft tissue infection
 8. Tuberculosis
 9. Syphilis and other spirochetal diseases
 10. Rocky Mountain spotted fever and other rickettsial diseases
 11. Mycoplasma pneumoniae pneumonia
 12. Infections caused by drug-resistant organisms
- B. Viral infection
 1. Influenza and prevention
 2. Herpes infection, Hepatitis A, B and C
 3. Infectious mononucleosis and cytomegalovirus
- C. Fungal infection
 1. Deep seated mycoses
 2. Clinical syndromes of aspergillus
 3. Cryptococcal infection
 4. Mucormycoses
- D. Protozoal infection
- E. Helminthic infection
- F. Leishmaniasis

- G. Antibiotic, antifungal, antiviral therapy
- H. AIDS and its opportunistic infections
 - a. Fever of unknown origin

II. History Skills

- A. Demonstrate at bedside ability to elicit history with special attention to relevant travel and residential history, animal contact, work and recreational activity, drug use and sexual history
- B. Elicit any co-existing disease which may be relevant to pathogenesis of infection

III. Physical Examination

- A. Demonstrate ability to perform thorough physical exam in effort to determine source of infection
- B. Recognize skin lesions which may provide diagnostic clues to etiology of infection
 - 1. Review slides of photos of:
 - a. ECM in Lyme disease
 - b. Palms and soles rash of RMSF
 - c. Ecthyma gangrenosum in pseudomonas infection
 - d. Erysipelas and impetigo
 - e. Dermatomal rash of herpes Zoster
 - 2. Superficial dermatophytes
 - 3. Skin lesions of bacterial endocarditis - Osler nodes, Janeway lesions, and splinter hemorrhages
 - 4. Toxic shock syndrome (staphylococcal/streptococcal)
- C. Recognize fever patterns and their possible diagnostic indications
- D. Use physical diagnosis skills to recognize potentially infected joint effusion, pleural effusion, ascitic fluid
- E. Recognize the clinical picture of candida pharyngitis, otitis media, malignant otitis externa, sinusitis including mucor infection
- F. Perform Kernig and Brudzinski tests in evaluating for meningitis

IV. Diagnostic Tests

- A. Obtain sputum on patients with pneumonia
- B. Obtain appropriate body fluid (CSF, pleural, peritoneal, joint)
- C. Perform and interpret gram stain in patients with UTI, septic arthritis, empyema, meningitis
- D. Perform acid fast stain for active pulmonary tuberculosis
- E. Order appropriate serologic and imaging tests for all clinical syndromes described in I
- F. Interpret antibiotic susceptibility tests including MIC's and serum bactericidal test
- G. Recognize need for special tests and procedures such as bronchoscopy, liver biopsy, colonoscopy; special stains for Legionella, chlamydia, pneumocystis

V. Therapeutic Interventions

- A. Choose appropriate antibiotic regimens based on the principles of:
 - 1. Spectrum of activity
 - 2. Distribution
 - 3. Toxicity
 - 4. Synergy and antagonism
 - 5. Cost
- B. Compare and contrast these principles with respect to penicillins, cephalosporins, aminoglycosides, monobactams, quinolones, macrolides
- C. Identify indications for determining MIC's, serum bactericidal test and antibiotic levels
- D. Recognize the necessity to stop antibiotic therapy for potentially life threatening side effects such as allergy, antibiotic associated diarrhea, bone marrow suppression
- E. Understand indications for amphotericin vs imidazoles in fungal infection. Be able to use amphotericin with respect to dosing and monitoring
- F. Recognize need for consultation for surgical intervention (including valve replacement for endocarditis), drainage of abscess, chest tube for empyema, fasciotomy for necrotizing skin infection
- G. Initiation of empiric antibiotic treatment in the febrile neutropenic patient

VI. Prevention

- A. Know target population for influenza and pneumococcal vaccine.
- B. Know all agents useful in the prophylaxis of opportunistic infections in AIDS - i.e., pneumocystis, fungal infection, MAI

C. Know proper sources to gain knowledge about specific prophylactic measures for travelers

Rheumatology

I. Knowledge

- A. Clinical manifestations of SLE
- B. Rheumatoid arthritis
- C. Scleroderma
- D. Mixed connective tissue disease
- E. Sjogren's syndrome
- F. Ankylosing spondylitis
- G. Vasculitic syndromes
- H. Sarcoidosis
- I. Osteoarthritis
- J. Psoriatic arthritis and arthritis associated with GI diseases
- K. FMF
- L. Behcet's disease
- M. Gout

II. History Skills

- A. Demonstrate ability to elicit history of multisystem disease. Know importance of extra-articular symptoms such as rash, uveitis, aphthous ulcers, alopecia, pleuritic pain
- B. In patient with joint disease, determine presence or absence of morning stiffness, redness, heat, swelling, restricted movement
- C. Obtain occupational, athletic history
- D. Obtain family history of joint disease
- E. Elicit history of neck and back pain
- F. Elicit history of surgery and prosthetic joints

III. Physical Exam Skills

- A. Know the physical findings associated with each of the diseases listed in I.
- B. Evaluate each joint for swelling, erythema, tenderness, crepitation, contracture, deformity.
- C. Determine range of motion and compare to normal. Identify Heberden node, Bouchard node, ulnar deviation, Swan neck deformity.
- D. Demonstrate joint effusion.
- E. Examine the spine. Evaluate chest expansion for spondylitis.
- F. Recognize characteristic rashes of SLE, heliotropic rash of dermatomyositis, purpuric rash of vasculitis.
- G. Identify characteristic exam findings of scleroderma.
- H. Recognize the rheumatoid nodule

IV. Diagnostic Tests

The student should be able to:

- A. Aspirate effusion of knee
- B. Order appropriate X-rays for joint disease and recognize characteristic abnormalities
- C. Know relative sensitivity and specificity of the following: rheumatoid factor, anti DNA, anti SM, anti RNP, anti RO (SSA), anti LA (SSB), ANCA

V. Therapeutic Interventions

- A. Know standard treatment options for all diseases listed in I
- B. Seek orthopedic consultation to assess need for: osteotomy, synovectomy, joint reconstruction or replacement, synovial cyst surgery, unstable joint tendon repair
- C. Seek physical therapy consultation for: heat treatment, massage, range of motion exercises, ultrasound

VI. Preventive Measures

Know rheumatic fever prophylaxis – indications

1. On-call duty, from 5 to 10 PM, with active participation to admission of acutely-ill patients
2. Attendance of daily morning reports, with presentation of cases and review of the pertinent literature

H. List of seminars and their objectives

Interpretation of ABG's	<ol style="list-style-type: none"> 1. Basics acid base disorders 2. How to interpret ABG 3. Understand physiology of acid base disorders 4. Clinical implications of acid base disorders
Approach to patient with anemia	<ol style="list-style-type: none"> 1. Classification of anemia 2. Causes of anemia 3. Approach to patient with anemia 4. Role of blood film in anemia
Approach to Patient with Heart Failure	<ol style="list-style-type: none"> 1. Clinical picture of heart failure 2. Causes of heart failure 3. Precipitating factors 4. Diagnostic approach 5. Therapeutic approach
Brain Attack	<ol style="list-style-type: none"> 1. Define brain attack 2. Clinical picture and anatomic localization of the stroke 3. Approach to management 4. Prevention of stroke
Pleural Effusion	<ol style="list-style-type: none"> 1. Clinical and radiographic picture of pleural effusion 2. Diagnostic approach to pleural effusion 3. Exudative versus transudative effusion
Liver Cirrhosis	<ol style="list-style-type: none"> 1. Clinical and laboratory features of liver cirrhosis 2. Causes of liver cirrhosis 3. Diagnostic approach 4. Therapeutic approach 5. Complications of liver cirrhosis
Interpretation of Chest X Ray	<ol style="list-style-type: none"> 1. Basics of chest radiography 2. Identify technical problems in a CXR 3. Identify anatomic landmarks in CXR 4. Know common pathologies in CXR
Diabetic & Endocrine Emergencies	<ol style="list-style-type: none"> 1. Diabetic ketoacidosis 2. Non-ketotic Hyperosmolar state 3. Thyrotoxicosis crises 4. Hypoadrenalism
Management of Epilepsy	<ol style="list-style-type: none"> 1. identify types of epilepsy 2. discuss various antiepileptic medications 3. Common side effects of these medications 4. Management of status epilepticus
Peptic Ulcer Disease	<ol style="list-style-type: none"> 1. clinical feature 2. Role of endoscopy 3. Eradication therapy 4. Acute and long term complications
Approach to patient with arthritis	<ol style="list-style-type: none"> 1. Monoarthritis 2. Polyarthritis 3. Role of serology 4. Seronegative arthritis
Acute Upper Gastro-intestinal bleeding	<ol style="list-style-type: none"> 1. Causes 2. Diagnosis 3. Severity assessment 4. Role of endoscopy 5. Treatment
Cardiac Arrhythmias	<ol style="list-style-type: none"> 1. Tachyarrhythmias 2. Bradyarrhythmias 3. ECG diagnosis 4. Acute and long term management
Interpretation of PFT	<ol style="list-style-type: none"> 1. Physiology of lung function 2. Main ventilatory defects 3. Interpretation of spirometry and flow volume loop curve

	4. Clinical use of PFT
Acute Coronary Syndrome	<ol style="list-style-type: none"> 1. Define ACS 2. Unstable angina 3. Non ST elevation acute MI 4. ST elevation MI 5. Role of cardiac cath

I. Assessment:

4. In-course evaluation: 10 %
5. End of rotation OSCE exam: 30 %
6. Written (MCQ) exam: 45 %
7. Final oral exam (15%)

J. Recommended text books and References

3. **Davidson's Principles and Practice of Medicine, 20th Edition With STUDENT CONSULT Online Access.** By Nicholas A. Boon, MA, MD, FRCP(Ed), FESC, Nicki R. Colledge, BSc, FRCP(Ed), Brian R. Walker, BSc, MD, FRCP(Ed) and John A. A. Hunter, OBE, BA, MD, FRCP
4. **Kumar and Clark's Clinical Medicine, 7th Edition - With STUDENT CONSULT Online Access.** By Parveen Kumar, CBE, BSc, MD, FRCP, FRCP(Edin) and Michael L. Clark, MD, FRCP
5. **Macleod's Clinical Examination, 12th Edition With STUDENT CONSULT Access.** By Graham Douglas, BSc(Hons), MB, ChB, FRCPE, Fiona Nicol, BSc(Hons), MB, BS, FRCGP, FRCPE and Colin Robertson, BA(Hons), MB, ChB, FRCPE, FRCS



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of General Surgery

A)Basic Information

1. **Course title: General Surgery II**
2. **Specialty: M.B.B.S. program**
3. **Department offering the course: Department of General Surgery**
4. **Academic year: First semester Sixth year**
5. **Date of specification approval: Department council date:**
6. **Internal Evaluator :Prof . Dr. -----**
7. **Allocated marks: 450 marks.**
8. **Course duration: 10 weeks of teaching.**
9. **Course Code: MED612**
10. **Credit Hours: 9 Credits**

B)Professional Information Course Title:

II. Course description

The ten-week surgical rotation is an intense clinical experience that introduces students to the basic principles of surgery. Students rotate on the Surgical Teams at various hospitals that are affiliated to the medical school in the university. 8 weeks of general surgery and two-week blocks of surgical subspecialties make up the rotation. During the rotations, students learn pre-, peri-, and post-operative evaluation and management of surgical diseases. Time is spent on the wards, in outpatient clinics, and in the operating room.

II. General Objectives:

At the conclusion of their rotations, all students should be capable of:

- Performing a complete physical examination for the areas of head and neck, musculoskeletal and abdomen.
- Demonstrating an adequate knowledge of surgical diseases
- Performing both Complete and Focused patient workups and presentations
- Displaying professional behavior and functioning effectively as a member of a health care team

III. Specific Objectives of the Course:

After studying the material covered in the lectures and bed-side teaching sessions of this course, the student is expected to achieve the following specific objectives:

No.	Subject	Specific Objectives
1	Aneurysms and vascular anomalies	<ul style="list-style-type: none"> • Describe the common sites and relative incidence of arterial aneurysms. • List the symptoms, signs, and differential diagnosis, and diagnostic and management plans for a patient with a rupturing abdominal aortic aneurysm. • Discuss the indications, contraindications, and risk factors for surgery in chronic asymptomatic abdominal aneurysms. • Define and discuss the prevention of the common complications following aneurysm surgery. • Compare thoracic, abdominal, femoral and popliteal aneurysms with respect to

		presentation, complications (i.e., frequency of dissection, rupture, thrombosis, and embolization), and treatment.
2	Peripheral vascular occlusive disease	<ul style="list-style-type: none"> • Describe the pathophysiology of intermittent claudication; differentiate this symptom from leg pain due to other causes. • Describe the diagnostic approach and medical management of arterial occlusive disease; include a discussion of the roles of the commonly used noninvasive procedures. • List criteria to help differentiate venous, arterial, diabetic, and infectious leg ulcers. • Describe the operative treatment choices available for chronic occlusive disease of the distal aorta and iliac arteries, superficial femoral / popliteal arteries, and tibial and peroneal arteries. • List four indications for amputation and discuss clinical and laboratory methods for selection of the amputation site. • Describe the clinical manifestations, diagnostic workup, and surgical indications for chronic renal artery occlusion. • Describe the natural history and causes of acute arterial occlusion, and differentiate embolic occlusion and thrombotic occlusion. • List six signs and symptoms of acute arterial occlusion and outline its management (e.g., indications for medical versus surgical treatment).
3	Venous and lymphatic disorders	<ul style="list-style-type: none"> • Identify the usual initial anatomic location of deep vein thrombosis and discuss the clinical factors that lead to an increased incidence of venous thrombosis. • Identify noninvasive and invasive testing procedures for diagnosing venous valvular incompetence and deep vein thrombosis. • Outline the differential diagnosis of acute edema associated with leg pain. • Describe five modalities for preventing the development of venous thrombosis in surgical patients. • Describe the methods of anticoagulant and thrombolytic administration, evaluation of adequacy of therapy, and contraindication to therapy. • Describe the clinical syndrome of pulmonary embolus, and identify the order of priorities in diagnosing and caring for an acutely ill patient with life-threatening pulmonary embolus. • List the indications for surgical intervention in venous thrombosis and pulmonary embolus. • Outline the diagnostic, operative, and nonoperative management of venous ulcers and varicose veins. • Define lymphedema praecox, lymphedema tarda, primary lymphedema, and secondary lymphedema. • Explain the pathophysiology of lymphedema and discuss its treatment.
4	Thyroid gland and thyroglossal disorders	<ul style="list-style-type: none"> • Describe the symptoms of a patient with hyperthyroidism; discuss the differential diagnosis and treatment options. • Understand the major risk factors for carcinoma of the thyroid gland and the prognostic variables that dictate therapy. • List the different types of carcinoma of the thyroid gland and their cell type of origin; discuss the appropriate therapeutic strategy for each. • Discuss the evaluation and differential diagnosis of a patient with a thyroid nodule.
5	Adrenal and parathyroid surgical disorders	<ul style="list-style-type: none"> • Discuss the evaluation and differential diagnosis of a patient with hypercalcemia. • Discuss the surgical therapy of primary hyperparathyroidism. • Discuss the presentation and appropriate therapy for patients with parathyroid carcinoma, and contrast this with other causes of primary hyperparathyroidism. • Review the pathophysiology of secondary and tertiary hyperparathyroidism, and discuss the surgical therapies. • Describe the multiple endocrine neoplasia syndromes and their surgical treatment. • List and discuss three major adrenal dysfunctions, their clinical presentation, etiology, diagnostic procedures, and treatment options.

		<ul style="list-style-type: none"> • Describe the clinical features of Cushing's syndrome and tell how causal lesions in the pituitary, adrenal cortex, and extraadrenal sites may be distinguished from a diagnostic standpoint. • Discuss medical and surgical and surgical management of Cushing's syndrome in patients with adrenal adenoma and with pituitary adenoma causing adrenal hyperplasia, with an ACTH-producing neoplasm. • Describe the likely pathology, clinical features, and laboratory findings of a patient with hyperaldosteronism. • Discuss the diagnostic workup of a patient with suspected hyperaldosteronism and the preferred operative treatment. • Discuss pheochromocytoma, including its associated signs and symptoms, an appropriate diagnostic workup, and its treatment. • Describe the features of the multiple endocrine adenopathy syndrome associated with pheochromocytoma. • Discuss the possible causes of virilization in a patient, including the clinical presentation and diagnostic workup.
6	Diseases of the salivary glands	<ul style="list-style-type: none"> • Review the anatomy of major salivary glands. • Discuss patterns of presentation, investigations, and treatment of sialectasis. • Describe common infections affecting the major salivary glands (including postoperative parotitis). • Understand the clinical presentation of benign and malignant salivary gland tumours. • Classify malignant salivary gland tumors.
7	Congenital anomalies of the genitourinary system	<ul style="list-style-type: none"> • Identify the different anomalies (Agenesis, horseshoe Kidney, PUJ, Reflux, hypospadias) • Appreciate that such anomalies may be related to other anomalies. • Formulate a list of relevant investigations • Suggest the treatment modalities
8	Urinary calculi	<ul style="list-style-type: none"> • Discuss epidemiology & etiology of renal stones. • List complications of renal stones • Discuss metabolic incidents associated with stones • Outline principles of management Factors that influence treatment
9	Diseases of the prostate	<ul style="list-style-type: none"> • Outline the main embryological, anatomical, and physiological and histopathological features of prostate gland. • Discuss in brief the natural history and etiology of both inflammatory and neoplastic prostate diseases • Analyze the main clinical points related to prostatitis (acute and chronic) with reference to chronic pelvic pain syndrome • Provide a general overview of prostate tumors with reference to benign hyperplasia and adenocarcinoma. • Discuss of the role of screening methods.
10	Renal and bladder tumors	<ul style="list-style-type: none"> • Appreciate the clinical presentation and the indirect signs of each tumor. • Understand the methods and importance of staging • Identify the relevant investigations and confirmative measures • Appreciate the role of surgery in the treatment • Appreciate the role of other treatment modalities.
11	Testicular tumors	<ul style="list-style-type: none"> • Discuss acute scrotum versus painless swelling of scrotum. • Staging and its clinical implication. • List the management methods
12	Ischemic heart disease	<ul style="list-style-type: none"> • Recognize the clinical presentation • List the predisposing factors • Identify relevant diagnostic investigation • Cardiac angiogram review • Discuss modalities of treatment

13	Primary and secondary lung neoplasms	<ul style="list-style-type: none"> • Understand the major trends in lung cancer epidemiology in the past 50 years • Know the role of smoking in lung cancer and other less common environmental exposures • Describe the pathogenesis of lung cancer based on several current models of oncogenesis • Know the essential differences between the two major classifications of broncogenic carcinoma • Develop an algorithm for management of the symptomatic versus asymptomatic thoracic patient • Know the features of the TNM staging for non-small cell lung cancer • Develop an outline for management of non-small cell lung cancer and small cell lung cancer • Describe the presentation, evaluation, and management of secondary lung neoplasms • Be familiar with the spectrum of benign lung tumors
14	Mediastinal disorders	<ul style="list-style-type: none"> • Describe the key organs in each mediastinal compartment and the potential pathology that can arise • Know the general incidence of the most common mediastinal masses. • Develop an understanding of the options to evaluate mediastinal masses and the advantages and disadvantages of both • Know the differential for lesions that can be confused for primary mediastinal masses • Name the three most common tumors in each compartment • Know the differential diagnosis for a germ cell tumor • Know the potential diagnostic markers for paraneoplastic, endocrine and germ cell tumors
15	Surgical pleural disorders	<ul style="list-style-type: none"> • Understand the pathophysiology of pneumothorax and its management. • Know the differential diagnosis for fluid in the pleural space • Understand how patients develop a hemothorax and chylothorax and the appropriate treatment options • Outline the stages of development of an empyema • Describe the typical characteristics of pleural tumors
16	CNS Tumors	<ul style="list-style-type: none"> • Understand the differentiate types of primary CNS tumors & metastatic tumors. • Be able to know the basic pathological factors of CNS tumors. • To understand the clinical presentation (general & specific) • To know & apply the diagnostic tools with specific features of each type. • To be able to apply the management protocol & apply the different treatment modalities, surgery, radiotherapy & chemotherapy. • The prognosis of brain tumor in front & with specific types.
17	Pediatric surgery	<ul style="list-style-type: none"> • Determine maintenance fluid requirements and normal urinary output for infants and children. • Determine the blood volume and describe methods of replacement of blood loss in infants and children. • Describe the typical presentation and findings on physical examination of hypertrophic pyloric stenosis. • Define gastroesophageal reflux disease and describe its typical presentation and methods of evaluation. • Describe the typical presentation of neonatal bowel obstruction and methods of evaluation. Be able to describe the differential diagnosis of neonatal bowel obstruction. • Explain the typical clinical presentation of intussusception, including the principles of resuscitation, use of barium enema, and indications for and principles of operative treatment. • Explain the anatomical defect in Hirschprung's disease, and relate this to the

		<p>functional bowel obstruction.</p> <ul style="list-style-type: none"> • Describe the differential diagnosis for constipation and methods of treatment. • Describe the medical management of vomiting in infants and children. • Describe the differential diagnosis of vomiting and the importance of bilious vomiting in children. • Describe congenital diaphragmatic hernia and eventration of the diaphragm including diagnosis and treatment. • Define the most common types of esophageal atresia and describe the typical clinical presentation of an infant with esophageal atresia, the radiologic method of determining presence or absence of a distal tracheoesophageal fistula. • Describe the embryologic problem resulting in malrotation, the mechanism of duodenal obstruction, and small bowel volvulus. • State the principle of medical management of necrotizing enterocolitis and explain the indications for surgical intervention. • Describe a Meckel's diverticulum and list the four most common complications. • Define and distinguish gastroschisis and omphalocele and how the appearance of the herniated bowel differs from that of the omphalocele.
18	Skills of physical examination head & neck	<ul style="list-style-type: none"> • Cervical lymph nodes • Thyroid examination • Cystic hygroma • Examination of other neck masses • Carotid artery pulsations and carotid body tumor • Position of trachea
19	Physical examination of the chest	<ul style="list-style-type: none"> • Chest deformity description • Chest expansion • Signs of pleural thorax • Signs of pleural effusion • Heart sounds and position of apex beat •
20	Physical examination abdomen and genitalia	<ul style="list-style-type: none"> • Inspection for hernia orifices and cough impulse • Inspection of diversion of the recti • Palpate for hepatomegaly and how to measure liver span • Palpate for splenomegaly • Palpate for kidneys • How to differentiate between spleen and left kidney masses • Examine for ascitis • Palpate for abdominal aorta • Signs of hernia • Inguinal masses • Examination of genitalia for haematocele/ testicular masses, epidermal cyst
21	Physical examination lower limbs	<ul style="list-style-type: none"> • Describe shape and deformity • Signs of chronic ischemia • Peripheral pulsations • Examination for foot ulcers • Examination for superficial and deep sensations • Examination for muscle power muscle tone, and reflexes • Examination for amputations (level, stump, joint deformity) • Signs of DVT • Signs of varicose veins
22	Physical examination general	<ul style="list-style-type: none"> • Pulse examination • Blood pressure examination • Signs of anemia • Signs of dehydration • Signs of cyanosis

		<ul style="list-style-type: none"> • Signs of jaundice • Level of consciousness
23	Physical examination for post operation patient	<ul style="list-style-type: none"> • Types of skin incisions • Describe colostomy • Describe drains • Describe I.V lines and canulae

IV. Weekly Teaching Activity

Time	Sunday	Monday	Tuesday	Wednesday	Thursday
8:00-9:30 am	Students take a full history and do physical examination				
9:30-12:00 pm	Bedside teaching session, or outpatient clinics or visiting operating theaters				
12:00-13:00 pm	Lunch break				
13:00-15:00 pm	Lectures				

V. Assessment

Exam Format	Weight (%)
OSCE-exam	40%
MCQ exam	40%
Evaluation	20%

VI. Recommended Textbooks:

- Bailey and Love's Short Practice of Surgery by Norman S Williams, Christopher J.K. Bulstrode, and P Ronan O'Connell.
- Textbook of Surgery by Joe Tjandra, Gordon J. A. Clunie, Andrew H. Kaye, and Julian Smith.
- Browse's Introduction to the Symptoms & Signs of Surgical Disease - by Norman L. Browse, John Black, Kevin G. Burnand, and William E. G. Thomas.
- Lecture Notes: Urology by John Blandy and Amir Kaisary Brose signs and symptoms of surgical disease.
-

VII. Recommended References

- Schwartz's Principles of Surgery, by F. Brunicaudi, Dana Andersen, Timothy Billiar, and David Dunn.
- Sabiston Textbook of Surgery: Sabiston Textbook of Surgery: The Biological Basis of Modern Practicurgical Practice, by Courtney M. Townsend Jr. MD, R. Daniel Beauchamp MD, B. Mark Evers MD, and Kenneth L. Mattox MD



**21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Department of Pediatrics**

A)Basic Information

- 1. Course title: PediatricsII**
- 2. Specialty: M.B.B.S. program**
- 3. Department offering the course: Department of Pediatrics**
- 4. Academic year: First semester Sixth year**
- 5. Date of specification approval: Department council date:**
- 6. Internal Evaluator :Prof . Dr. -----**
- 7. Allocated marks: 450 marks.**
- 8. Course duration: 8 weeks of teaching.**
- 9. Course Code: MED613**
- 10. Credit Hours: 9 Credits**

B)Professional Information:

This is an eight weeks rotation for 6th year medical students. During these 8 weeks rotation, students are exposed to different settings through rotating with different sub specialist in different hospitals. This includes both in patients and out patients encounters. This rotation is to emphasize active student's involvement of students in patient care and allow them to follow their own patients with continuity. Students are also encouraged to act at the level of interns in preparation for graduation requirement. Throughout the course, students will be involved in the daily morning report, clinical rounds, outpatient clinics and interactive seminars.

V. General Objectives:

By end of rotation the student should be able to:

- 1- Put plan of management for common pediatric diseases.
- 2- Take focused clinical history and relevant examination, and able to integrate these into disease process and differential diagnosis list
- 3- List common investigation used to establish diagnosis and recognize indication and limitation of these investigations.
- 4- Build communication skills and appropriate behavior that is needed to interact with patient families and other medical colleagues and staff member.
- 5- Participate in caring for pediatric patient by present cases in morning report, management round, out patient department and night calls.

VI. Methods of Instructions:

- Morning report
- Bed side teaching session
- Out patient encounter
- Emergency Room rotation
- Lectures + Seminars

VII. Evaluation and distribution of mark.

- 1- In course evaluation 20%
- 2- Final clinical examination 40%
- 3- Final written exam 40%

IV: Recommended Text Books

- 1- Nelson Textbook of pediatrics
- 2- Forfar Textbook of pediatrics
- 3- Oski Textbook of pediatrics
- 4- Nelson Essential of paediatrics

**Seminars (6th) year Medical Students
Pediatric Department**

	Sub.	Name
1	Approach to a child with hypotonia	
2	Approach to a child with loss of consciousness	
3	Approach to a child with Rickets calcium disorder	
4	Approach to a child with Anemia	
5	Approach to a child with lymphadenopathy or hepatosplenomegaly	
6	Approach to a child with acute and/ or chronic diarrhea	
7	Formula versus breast feeding.	
8	Approach to a child with seizure and fever/ status epilepticus	
9	Approach to a child with FTT	
10	Approach to a child with heart murmur or CHF	
11	Approach to newborn with hyperbilirubinemic	
12	Approach to newborn with cyanosis (cardiac).	
13	CPR & Emergency / ABG interpretation	
14	Antibiotic therapy in common pediatric infections	
15	Fluid Therapy/ hypovolemic shock/ ARF	
16	Approach to newborn with respiratory distress	
17	Approach to a child with Developmental delay	
18	Approach to a child with wheezy chest	
19	Approach to fever without focus in infants with different ages .	
20	Approach to a child with excessive bleeding tendency	
21	Neonatal resuscitation	
22	Approach to a child with Red Urine and/or proteinuria	
23	Approach to a child with short stature/ thyroid disorders	
24	Antibiotic therapy in special disease (CF. Neutropenia immunodeficiency, abscess, osteomyelitis, meningitis)	



21 Sep. University of Medical and Applied sciences
Faculty of Medicine
Obstetrics And Gynaecology

A)Basic Information

- 1. Course title: OBSTETRICS AND GYNAECOLOGY II**
- 2. Specialty: M.B.B.S. program**
- 3. Department offering the course: Department of Obstetrics And Gynaecology**
- 4. Academic year: Second semester Sixth year**
- 5. Date of specification approval: Department council date:**
- 6. Internal Evaluator :Prof . Dr. -----**
- 7. Allocated marks: 450 marks.**
- 8. Course duration: 8 weeks of teaching.**
- 9. Course Code: MED621**
- 10. Credit Hours: 9 Credits**

B)Professional Information:

M640 Obstetrics and Gynecology II (9 Credits hours, 8 weeks)

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

A. Methods of Instructions:

- Bed- side teaching sessions
- Seminars
- Clinical skill lab
- Case Discussion

B. Bed side teaching:

This is a 3-hour hospital based daily sessions for a small group of students (about 10-12 students), supervised by a staff member, where the students acquire the following skills:

- Taking appropriate history by taking history from patient
- Conducting proper physical examination for patients with various common obstetrics and gynaecology problems
- The students are expected to generate a problem list or differential diagnosis for common obstetrics and gynaecology and know how to reach a diagnosis by rationale utilization of laboratory and imaging facilities.

The students rotate between King Abdullah university hospital, governmental hospitals and military hospital.

C. Clinical rotations in the outpatient clinics, Operating theatre, Delivery suite and emergency room

D. Clinical skill Lab: each group of students spends four sessions per rotation in a clinical skill lab. The students are expected to practice:

- Obstetric examinations and conduct of vaginal delivery
- Bimanual examination and cervical smear taking
- Counseling and application of various methods of contraception

General objectives (Maximum 10 objective)

Medical Knowledge

1. The student will be able to describe the maternal physiologic and anatomic changes associated with pregnancy and the physiologic functions of the fetus and placenta.
2. The student will be able to describe the stages, mechanisms and management of normal labor and delivery and identify common problems in obstetrics.
3. The student will be able to describe potential consequences of medical and surgical conditions in pregnancy.
4. The student will be able to explain the physiologic or pharmacologic basis of action, effectiveness, benefits and risks and financial considerations of various methods of contraception.
5. The student will be able to describe the endocrinology and physiology of the normal menstrual cycle, including menopause, and to describe causes, evaluation methods and therapeutic options for abnormal uterine bleeding.
6. The student will be able to describe age and risk-appropriate recommendations for the screening of reproductive cancers.

Patient Care

1. The student will demonstrate the ability to perform a thorough Ob/Gyn history, including menstrual history, obstetric history, gynecologic history, contraceptive history and sexual history.
2. The student will demonstrate the ability to perform an obstetric-gynecologic examination, including breast examination and complete pelvic examination that is comfortable for the patient.
3. The student will demonstrate the ability to collect and interpret cervical cytology results.
4. The student will demonstrate the ability to interpret electronic fetal monitoring.
5. The student will demonstrate the ability to interpret a wet mount microscopic examination.
6. The student will demonstrate the ability to communicate the results of the OB/GYN history and physical examination by well organized written notes and oral reports.
7. The student will demonstrate the ability to develop hypotheses, diagnostic strategies and management plans in the evaluation of antepartum, intrapartum and postpartum patients.
8. The student will demonstrate the ability to develop hypotheses, diagnostic strategies and management plans in the evaluation of patients with gynecologic problems, including routine postoperative care following gynecologic surgery.

9. The student will be able to create a differential diagnosis of the "acute abdomen" in women of reproductive age, including pelvic infection, ectopic pregnancy, adnexal torsion, appendicitis, diverticulitis and renal calculi.
10. The student will be able to describe the age appropriate screening procedures and recommended time intervals for routine health maintenance and disease prevention in women.
11. The student will be able to describe the symptoms, physical findings, evaluation, management and public health concerns of various vaginal and vulvar disorders, including sexually transmitted infections.
12. The student will be able to describe the basic approach to evaluating common symptoms associated with the breast, including preventive measures for maintaining breast health as well as issues related to lactation.

Interpersonal and Communication Skills

1. The student will demonstrate the ability to interact with the patient to gain her confidence and cooperation and assure her comfort and modesty.
2. The student will demonstrate the ability to assess and counsel women for sex- and gender-appropriate reduction of risk, including lifestyle changes and genetic testing, in a manner that is sensitive to cultural beliefs.
3. The student will demonstrate the ability to share knowledge effectively with peers.

Professionalism

1. The student will show compassion in the treatment of patients and respect for their privacy, dignity and beliefs.
2. The student will acknowledge and accept the limitations in his or her knowledge and clinical skills and seek assistance when appropriate.

The above set of learning objectives is designed to communicate clearly what is expected in terms of the knowledge, skills, and attitudes that ideally would be acquired during the obstetrics and gynecology clerkship by all students, regardless of their choice of medical specialties.

Seminars:

- Management of abdominal pain in pregnancy
- Management of early pregnancy bleeding
- The management of the small for the gestational age
- Management of patients with severe PET & eclampsia
- Management of recurrent miscarriage
- Management of abnormal vaginal bleeding
- Maternal and perinatal mortality & morbidity
- Approach to fetal anomalies
- Management of the infertile couple
- Principles of Gynaecological surgery
- Management of obstetric haemorrhage (APH,PPH)
- Cesarean section
- Vaginal discharge and pruritis vulvae
- Family planning
- Management of patients with abnormal cervical smear

- Management of pelvic mass
- Principles of assisted reproductive technology
- Urinary problems in gynaecology
- Abnormal labor
- Management of obstetric emergencies (uterine inversion, uterine rupture, cord prolapse, shoulder dystocia)

Week (1-8): typical week timetable

	SUNDAY	Monday	TUE	wed	THURSDAY
8-9	Morning report	Morning report	Morning report	Morning report	Grand round
9-10	round	round	round	round	round
10-12	Bed side Teaching Or rotation Or skill lab	Bed side Teaching Or rotation Or skill lab	Bed side Teaching Or rotation Or skill lab	Bed side Teaching Or rotation Or skill lab	Bed side Teaching Or rotation Or skill lab
12.30-2	Seminar	Seminar	Seminar	Seminar	Seminar
2- 5					

Assessment: I listed the format for the organ system, Please make necessary adjustments to fit your course

	EXAM FORMAT	WEIGHT (%)
FIRST EXAM (end of rotation)	OSCE format	30%
In course evaluation	Faculty members	10%
FINAL EXAM	MCQ	45%
Final exam	viva	15%

Recommended text book:

Author	publisher	Title
Hacker, Moore, GAMB	W B Saunders	Essentials Of Obstetrics And Gynecology
Campbell, Monga	Hodder Arnold	Gynecology By Ten Teachers
Campbell, lees	Hodder Arnold	Obstetrics By Ten Teachers

Suggested readings

Medical websites relevant to the field

Grading System

No	Gradingobtained	Gradeawarded
1.	<50%	FAIL
2.	50- <65	Satisfactory
3.	65-<75	Good
4.	75- <85	VeryGood
5	85- <100	Excellent

أعضاء لجنة توصيف برنامج كلية الطب

م	الاسم	
١	أ.د/ مُحَمَّد عيسى	عميد كلية الطب
	د/ مُحَمَّد الضيبياني	
٢	د/ عبد الكافي عباد	
٣	د/عبد الرقيب المرح	
٤	د/ مُحَمَّد الخميسي	
٥	د/ أكرم الحاج	
٦	د/ عبد الله النعيم	
٧	د مُحَمَّد شمس الدين	
٨	د/عبد الخالق جابر	
٩	د/ مُحَمَّد اليحيري	
١٠	د/ صادق الجبري	
١١	د/ خالد الطهيف	
١٢	د/ منى غشيم	
١٣	د/ عبده ناجي	

اللجنة الإشرافية

م	الاسم	
١	أ.د/ ياسر أحمد عبد المغني	رئيس الجامعة
٢	أ د/ خالد سعد الخميسي	رئيس اللجنة الإشرافية