21 SEPTEMBER UNIVERSITY OF MEDICAL AND APPLIED SCIENCES
FACULTY OF LABORATORY MEDICINE

Vision

To be a recognized professional faculty at the national, regional, and international levels in providing superior laboratory medicine education, scientific research, and community services.

Mission

The mission of the faculty of laboratory medicine at the University of 21 is to develop and maintain superior educational in the field of laboratory medicine. Graduates of the faculty will be knowledgeable, highly skilled, well trained and ethical, prepared to practice as competent professional at the national, regional, and international levels and capable to grow with the future of laboratory medicine.

Values

In line with the values of the University of 21, the faculty of laboratory medicine will struggle towards:

Excellence: faculty of laboratory medicine pursues excellence, bonded by a spirit of cooperation and mutual assistance.

Professionalism: faculty of laboratory medicine respects and adheres to the standards of professional performance, behavior and practice.

Innovation and Creativity: faculty of laboratory medicine supports an environment that encourages individuals to address opportunities and threats in innovative and creative paths.

Cultural Respect and Sensitivity: faculty of laboratory medicine supports an environment that recognizes, encourages and respects cultural diversity and differences in thought and culture to enhance the productivity of the academic environment.

Program Goals

The objectives of the faculty of laboratory medicine at the University of 21 are:

1. To provide students a superior and comprehensive educational program in laboratory medicine
2. To graduate students with knowledge base required to practice laboratory medicine effectively and carefully
3. To graduate professionally competent laboratory medicine prepared to meet the workforce needs of Yemen and the regions
4. To graduate individuals exhibiting sense of commitment to the ethical and humane aspects of patient care, and recognizing the role in assuring quality health care.
5. To graduate students with effective communication, management and leadership, problem solving/ critical thinking skills that provide compassionate patient care.
6. To graduate students who value the importance of professional development to patient care and laboratory medicine field through life-long learning and meet the needs of the laboratory medicine community.

Study plan for laboratory medicine (integrated system)

Total program hours

No.	Item	Credit hours
1	University requirements	8
2	Preparation year	9
3	College requirements	169
4	Total	186

First year first semester (Foundation)

	Code	Theory	practical	Credit hour
Islamic culture	ISL116	2		2
English language (1,2)	ENG114	2		2
Medical Physics	PHY 118	2		2
Chemistry		2		2
Medical Ethics	ETH115	2		2
Arabic Language	ARB111	2		2
Fundamentals of Nursing	NUR117	2	1	3
Medical Terminology	TER119	2		2
Total		17		18

First year Semester 2:

	Code	Theory	practical	Credit hour
General Anatomy		2	1	3
General Physiology		2	1	3
General Biochemistry		2	1	3
General Histology		2	1	3
General Molecular Biology		2	1	2
General Nutrition	NUT127	2	-	2
Computer skills		2	-	3
Communication Skills	COU125	2	-	2
Introduction to Embryology		2	-	2
Total		18	5	23

Second year Semester 1:

	Code	Theory	practical	Credit hour
Parasitology		2	1	2
Microbiology (I)		2	1	3
General Pathology		3	1	4
General Pharmacology		2	1	3
Molecular Genetics		2	1	3
Basic immunology		2		2
Primary Health Care		2		2
Total		15	5	19

Second year Semester 2:

	Code	Theory	practical	Credit hour
Microbiology (II)		2	2	2
Respiratory system		4	2	6
Cardio-vascular system		4	2	6
Haemopoietic & Lymphatic system		4	2	6
Cellular and molecular Immunology		2	1	3
Total				21

Third year Semester 1:

	Code	Theory	practical	Credit hour
Gastro-intestinal system		4	2	6
Endocrine system		5	1	6
Musculo-skeletal system		4	2	6
Forensic Medicine & Toxicology		2	1	3
Total				21

Third year Semester 2:

	Code	Theory	practical	Credit hour
Neuroscience		6	2	8
Urogenital system		6	2	8
Behavioral Psychology		2		2
Health Administration		2	-	2
Hepatobiliary				
Total				20

Fourth year Semester 1:

	Code	Theory	practical	Credit hour
Diagnostic parasitology		2	1	3
Immunohematology		2	1	3
Drug interfering lab test		1		1
Diagnostic microbiology 1 (bacteria, viruses and fungus)		2	2	4
Clinical chemistry 1		4	2	6
Leukemia and lymphoma		2	1	3
Drug monitoring		1		1
Biostatistics		2	1	3
Total				21

Fourth year Semester 2:

	Code	Theory	practical	Credit hour
Diagnostic hematology		2	1	3
Clinical and diagnostic immunology		2	1	3
?		2	1	3
Molecular diagnostic		2	1	3
Diagnostic microbiology 2 (bacteria, viruses and fungus)		2	1	3
Clinical chemistry 2		4	2	6
Quality assurance and quality control				
Total				21

Six Months Practical Training (application years)		
Endnote		
SPSS and EPI info programs		
Research Projects	2	
	Practical contact hours	
Parasitology	Total 50 hrs	1
Hematology	Total 100 hrs	2
Pathology	Total 100 hrs	2
Immunology	Total 50 hrs	1
Microbiology	Total 100 hrs	2
Clinical chemistry and drug monitoring	Total 100 hrs	2
Blood bank and organ transplantation	Total 50hrs	2
Molecular genetics	Total 50hrs	2
Total credit hours		14

Year 1

(32weeks)

First Year: Second semester

General Anatomy

I. General information about the course

1	Course Title	General Anatomy
2	Course Code	LM 121
3	Credit hours	3h (2h theoretical + 1h practical)
4	Academic Year	First Year- Second semester
5	Program(s) in which the course is offered.	Bachelor of Laboratory Medicine
6	Department	Human anatomy and embryology
7	Study System	Integrated system
8	Teaching Language	English
9	Pre-requisites	Medical terminology
10	Co-requisites	None
11	Allocated Marks	150
12	Course duration	15 weeks

II. Course Description

General anatomy course provides students a useful foundation in basic gross and microscopic anatomy.

III. Course Aims:

Anatomy course aims to

1. Enable students to understand the structure and organization of the human body.
2. Provide students with basic anatomical structures of the body and how they are integrated to form functional units.
3. Enable students to correlate between structure and function.

III. Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

After completing this course, students would be able to:

1) *a*1. Define different general anatomical and embryological terminology.
2) a2. 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).
3) a3. Summarize the different stages of the human development and growth.
4) a4. Recognize surface landmarks and projections important in physical examination and understand landmarks and internal structures found at various vertebral levels.
5) b5. Understand the important joints of the body, their movements and the muscles producing these movements
6) b6. Understand important individual muscles, their origin, insertion, nerve supply, actions and important relations.

B- Intellectual skills

1) b1. Interpret the normal anatomical structures on x-ray
2) b2. Apply his understanding of the body structure to solve simple problems of applied anatomy.

C- Professional and practical skills

1) c1. Name the instruments and techniques used to prepare and study histological specimens.
2) c2. Identify microscopic structure of different cells, tissues and organs provided.
3) c3. Draw a labeled diagram of microscopic structure of different cells, tissues and organs provided

IV-Course content

	Topic	lec	pract	Total
1	**a. Introduction** 1. Anatomical positions, planes & terms: **Skeleton**: Parts. Function & types of bones, parts of long bones. Structure of bones	1	1	2
2	**Skin**: Structure, appendages & glands Fascia: Structure & types. Muscles & its types.	2	1	3
3	Joints & its types.	1	1	2

	Serous membranes.			
4	Nervous system: Brain (Parts), Cranial nerves, Spinal cord (parts) & Spinal nerves.	1	1	2
5	Cardiovascular system: Heart (Position & parts), Blood vessels (Types) & Great vessels (Nomenclature).	1	1	2
6	Lymphatic system (Overview)	1		1
	b. UPPER LIMB			
7	Bones of upper limbs Pectoral region Breast.	1	1	2
8	Axilla: Boundaries & contents, Axillary vessels, brachial plexus & axillary lymph nods.	1	1	2
9	Shoulder region. Arm. Cubital fossa. Forearm. Extensor retinaculum and back of the hand. Carpal tunnel and flexor retinaculum. Fascial spaces of the hand. Superficial veins of the upper limp. Nerve supply & nerve injuries. Segemental innervation, autonomic supply & cutaneous innervation. Segemental innervation, autonomic supply & cutaneous innervation.	2	1	3
10	Joints	1	1	2
11	Lymphatic drainage. Blood vessels	1	1	2
12	Surface, radiological & Clinical Anatomy	1	1	2
13	Development & Congenital anomalies of UL	1	1	2
	Total	15	13	28

V- Teaching methods

1-	Lectures
2-	Lab classes
3-	Group discussion
4-	Problem solving
5-	Presentation
6-	Reports
7-	assignment

V. Tasks and Assignments

No.	Assessment task	Week due	Proportion of final assessment
1	Quiz 1	Week 4	8%
2	Mid exam	Week 8	20
3	Quiz 2	Week 12	8%

4	Attendance	All weeks	4%
5	Assignments	During the block	10%
6	Practical exam	According to the group	50%
7	Final Exam	End of the block	50%

VI. References

Department books:

- Snell's anatomy

Essential books(textbook):

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

Recommended books:

- 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. 10thed
- Sadler T.W,(2008) : Langman's Medical Embryology, 11th ed., Lippincott Williams&Wilkins

Periodicals, Web sites

- http://www.anatomy.com
- http://www.medscape.com
- https://www.ncbi.nlm.nih.gov/pubmed/
- http://sciencedirect.com

General Physiology

I. General information about the course

1	Course Title	General Physiology
2	Course Code	LM 122
3	Credit hours	3h (2h theoretical + 1h practical)
4	Academic Year	First Year- Second semester
5	Program	Laboratory Medicine
6	Department	Physiology
7	Study System	Integrated system
8	Teaching Language	English
9	Pre-requisites	Medical terminology
10	Co-requisites	None
11	Allocated Marks	150
12	Course duration	15 weeks

II. Course Description

General physiology course provides students with basic knowledge on function of different human body systems in relation to their structure.

III. Course Aims:

Physiology course aims to provide students with

1- Knowledge of normal function and regulation of different body systems.
2- Understanding of the mechanisms triggering the function of organ systems.
3- Understanding changes of normal functions and mechanisms of disease.
4- Ability to test and estimate the functions of different body systems.

III. Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

After completing this course, students would be able to:

a1. Describe important cellular mechanisms of body homeostasis in respiratory, blood, cardiovascular, nerve and muscle, and autonomic nervous systems and biophysics.
a2. Describe the principles and mechanisms of membrane transport.
a3. Describe the physiological implications related to circulating body fluids.
a4. Describe the electrical and ionic events that underline the excitation of nerves, muscles as well as the mechanism underlying skeletal muscle contraction.
a5. Describe synaptic transmission and electrical properties of synaptic potential.
a6. 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.

B- Intellectual skills

After completing this course, students would be able to:
b1. Interpret the normal physiological structures and function.
b2. Analyze the relation between the knowledge of internal structure and the reach to professional diagnosis.

C- Professional and practical skills
After completing this course, students would be able to:
c1. Measure arterial blood pressure (palpatory and auscultatory methods).
c2. Identify auscultatory areas of the heart and lungs and auscultate heart sounds and breathing sounds.
c3. Palpate the arterial pulse and comment properly.
c4. Comment on electrocardiogram, and spirogram.

D- General and Transferable Skills
After completing this course, students would be able to:
d1. Respect academic/medical staff and colleagues
d2. Work effectively both in a team and independently.
d3. Communicate ideas and arguments effectively.
d4. Present the medical information in written, oral or electronic forms.
d5. Use the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

IV- Course content

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ lab*	
Physiology	Physiology definition & organization of the cell.	2		
	Physical structure of the cell.	2		
	Functional system of the cell.	2		
	Diffusion & transport across cell membrane	4		
	Cell function, cell reproduction & physiology of growth.	2		
	Body fluids, compartments, composition & functions.	2		
	Osmosis, osmolarity, isotonicity & body water balance.	2		
	Measurement of fluid volumes in the different body fluid compartments.	2		
	Basis of acid base balance	2		
	Homeostasis	2		
	Body temperature regulation	2		
	Basal metabolism, metabolic rate and factors affecting	2		
Total		**26**		

V. Teaching methods

1-	Lectures
2-	Lab classes
3-	Group discussion
4-	Problem solving

5-	Presentation
6-	Reports
7-	assignment

V. Tasks and Assignments

No.	Assessment task	Week due	Proportion of final assessment
1	Quiz 1	Week 4	8%
2	Mid exam	Week 8	20
3	Quiz 2	Week 12	8%
4	Attendance	All weeks	4%
5	Assignments	During the block	10%
6	Practical exam	According to the group	50%
7	Final Exam	End of the block	50%

VI. Learning Resources

Essential books

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

Textbooks

- John E Hall and Arthur C Guyton. Textbook of Medical Physiology, 12th edition: 2012.
- Kim E Barrett and Scott Boitano. Review of Medical Physiology

Periodicals, Web sites

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

General biochemistry

I. General information about the course

1	Course Title	General Biochemistry
2	Course Code	MD123
3	Credit hours	3h (2h theoretical + 1h practical)
4	Academic Year	First Year- Second semester
5	Program	Laboratory Medicine
6	Department	Biochemistry
7	Study System	Integrated system
8	Teaching Language	English
9	Pre-requisites	Chemistry, medical physics
10	Co-requisites	None
11	Allocated Marks	200
12	Course duration	15 weeks

II. Course Description

General biochemistry course provides students with basic knowledge on the molecular basis of biochemical processes in health and disease states.

III. Course Aims:

General biochemistry course aims to

1- Enable students to be oriented with the biochemical importance of some macro-and micronutrients
2- Enable student to understand the metabolic pathways of some macronutrients and nucleotides.
3- Enable students to point-out some hereditary and acquired metabolic disturbances and their biochemical laboratory and clinical outcomes.
4- Enable students to describe major body fluids composition and their clinical impact.

III. Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

After completing this course, students would be able to:

a1. Describe the relationship between protein structure and its biological function.
a2. Describe the generation and storage of metabolic energy.
a3. Define the role of phospholipids in determining the properties of biological membranes and their function.
a4. Outline the main metabolic pathways and their key steps.

B- Intellectual skills

After completing this course, students would be able to:

b1. Correlate biochemical alterations with clinical data to reach etiology, diagnosis and treatment.
b2. Interpret symptoms, signs and biochemical laboratory findings of some metabolic disorders.
b3. Analyze and evaluate laboratory results and use them in diagnosis of diseases.
b4. Assess the clinical significance of determination of plasma levels of glucose, total proteins, creatinine and uric acid.

C- Professional and practical skills

After completing this course, students would be able to:

c1. Able to perform lab tests in biochemistry lab.

D- General and Transferable Skills

After completing this course, students would be able to:

d1. Respect academic/medical staff and colleagues
d2. Work effectively both in a team and independently.
d3. Communicate ideas and arguments effectively.
d4. Present the medical information in written, oral or electronic forms.
d5. Use the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

IV- Course content

Introduction to Biochemistry	1. Lipids: • Fatty acids (structure, function and nomenclature). • Triacylglycerols (structure, function and nomenclature). • Glycerophospholipids (structure, function and nomenclature). • Sphingolycolipids (structure, function and nomenclature). • Cholesterol and related sterols (structure, function and nomenclature). • Lipoproteins.	6	2	
	2. Carbohydrates: • Monosaccharide. • Disaccharides. • Oligosaccharides. • Polysaccharides, homopolysacchari-des, hetropolysaccharides sugars derivatives.	6	6	
	3. Amino acids, Nucleic acid and proteins: • Essential, non-essential Amino acids. • Neutral, basic and acidic Amino acids. • Physical and chemical properties of amino acids. • Functions of proteins • Molecular structures of protein. • Properties and classification of protein. • Purine and pyrimidine bases.	6	4	

	• Nucleoside and nucleotides. • Nucleic acid (DNA and RNA).			
	4. Vitamins: • Classification. • Chemistry. • Sources. • Functions as coenzymes. • Human deficiency diseases.	6		
	5. Enzymes: • Definition. • Classification. • Mechanism of enzyme action. • Factors affecting rate of enzyme actions. • Isozymes.	4	2	
	Total (2L/w)	**28**	**14**	**42**

V. Teaching methods

1-	Lectures
2-	Lab classes
3-	Group discussion
4-	Problem solving
5-	Presentation
6-	Reports
7-	assignment

V. Tasks and Assignments

No.	Assessment task	Week due	Proportion of final assessment
1	Quiz 1	Week 4	8%
2	Mid exam	Week 8	20
3	Quiz 2	Week 12	8%
4	Attendance	All weeks	4%
5	Assignments	During the block	10%
6	Practical exam	According to the group	50%
7	Final Exam	End of the block	50%

VI. Learning Resources

Textbook

Thomas M. Devlin.Textbook of Biochemistry with Clinical Correlations: 5th edition, Wiley-Liss, 2005.

Essential books

Pamela C Champe, Richard A Harvey, Denise R Ferrier. Lippincott's Illustrated Reviews: Biochemistry, 5th edition, Lippincott Williams & Wilkins, 2011.

Periodicals, Web sites

https://www.biomedcentral.com/

http://www.medicinenet.com/

General Histology

I. General information about the course

1	Course Title	General histology
2	Course Code	MD 124
3	Credit hours	3h (2h theoretical + 1h practical)
4	Academic Year	First Year- Second semester
5	Program	Laboratory Medicine
6	Department	Histology
7	Study System	Integrated system
8	Teaching Language	English
9	Pre-requisites	Biology, Medical terminology
10	Co-requisites	None
11	Allocated Marks	150
12	Course duration	15 weeks

II. Course Description

General histology course describes the normal structure of the basic tissues, organs and systems of the human body.

III. Course Aims:

Histology course aims to

1- Provide a scientific knowledge of the normal structure of the human body and tissue cells at the level of molecular & cellular biology
2- Provide appropriate practical skills for tissue processing to prepare histological slides.
3- Enable students to know basics of cytogenetics and cell biology
4- Enable students to correlate between histological structure and functions of various tissue and organs.

III. Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

After completing this course, students would be able to:

a1. Define different general histological terminology.
a2. Describe the basic principles of structure of different body cells.
a3. State the basic principles of cell cycles and basics of cytogenetic.
a4. Outlines major clinical applications of cytogenetic diseases.
a5. Describe the basic principles of histo-chemistry
a6. summarize basic structure of epithelium, connective tissue, blood, cartilage, bone.
a7. Describe the clinical correlations with histological issues.

B- Intellectual skills

After completing this course, students would be able to:
b1. Integrate basic histological knowledge with clinical data
b2. Interpret the structural changes in cells to understand the underlying cause of different diseases.
b3. Solve problems related to structural dysfunction.
b4. Select appropriate methods to reveal specific microscopic features of cells and tissues.

C- Professional and practical skills
After completing this course, students would be able to:
c1. Name the instruments and techniques used to prepare and study histological specimens.
c2. Identify microscopic structure of different cells, tissues and organs provided.
c3. Draw a labeled diagram of microscopic structure of different cells, tissues and organs provided.

D- General and Transferable Skills
After completing this course, students would be able to:
d1. Respect academic/medical staff and colleagues
d2. Work effectively both in a team and independently.
d3. Communicate ideas and arguments effectively.
d4. Present the medical information in written, oral or electronic forms.
d5. Use the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

IV- Course content

General Histology	1. Cell structure and function.	4	4	
	Methods of histological studies	4	2	
	2. Blood & immune cells.	2	2	
	3. Epithelial tissue.	4	4	
	4. Connective tissue proper.	2	4	
	5. Cartilage.	2	2	
	6. Bone.	4	2	
	7. Muscles.	2	2	
	8. Nervous tissue	2	2	
	9. Glands	2	2	
Total		**28**	**22**	**50**

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V. Teaching methods

1-	Lectures
2-	Lab classes
3-	Group discussion
4-	Problem solving
5-	Presentation

6-	Reports
7-	assignment

IV. Tasks and Assignments

No.	Assessment task	Week due	Proportion of final assessment
1	Quiz 1	Week 4	8%
2	Mid exam	Week 8	20
3	Quiz 2	Week 12	8%
4	Attendance	All weeks	4%
5	Assignments	During the block	10%
6	Practical exam	According to the group	50%
7	Final Exam	End of the block	50%

VI. Learning Resources

a- Essential books (text books)

1- Gartner L. P. and Hiatt J. L. (2007): Color textbook of Histology 3rd edition.

General Molecular biology

I. General information about the course

1	Course Title	General Molecular biology
2	Course Code	LM 125
3	Credit hours	3h (2h theoretical + 1h practical)
4	Academic Year	First Year- Second semester
5	Program	Laboratory Medicine
6	Department	Biology
7	Study System	semester
8	Teaching Language	English
9	Pre-requisites	Medical terminology
10	Co-requisites	None
11	Allocated Marks	150
12	Course duration	15 weeks
	Date of specification/revision:	

B- Professional Information

1- Overall aims of course:

To provide the students with basic **review on the Cell Structure and Function** (Light and electron microscopic features of the nucleus, cytoplasm, cell membrane , mitosis, cell cycle) with emphasis on genetic model, transcription, protein synthesis, structural cell biology and cell signaling.

2 - Intended learning outcomes of course (ILOs)

a- Knowledge and Understanding:

After completing this course, students would be able to:

a1- Understand the dynamics of the cell as a basic unit of life

a 2- Recognize the development of cells and cellular functions at the molecular level.

b- Intellectual Skills

After completing this course, students would be able to:

b1- Illustrate the basis of molecular cell biology .

b2- Discuss basic similarities and differences of cells (EU&PRO karyotic cells).

c-**Professional and Practical Skills**

After completing this course, students would be able to:

c1-Gain skills to perform different techniques for protein separation.

c2- Gain experience in making and using antibodies.

c3-Gain skills to perform methods for initial fractionation of cell extraction.

c4-Gain experience to perform different methods for PCR amplification and PAGE.

d-General and Transferable Skills

After completing this course, students would be able to:

d1- Work as part of team

d2-Communicate through group discussion.

d3- Use information technology in learning**.**

e-Attitude

After completing this course, students would be able to:

e1- Develop communication skills

e2- Share ideas with others.

e3-To develop independent learning

3-Course content

	Topic	lect	pract	
	Introduction to course:			
	- Overview of Course.			
	- Organization of the cell.			
	- In-vito cultures.	2	1	3
	Biomembranes and the Subcellular Organization of Eukaryotic Cells and Prokaryotic Cells	2	1	3
	Transport across Cell Membranes	2	1	3
	Protein Structure and Function			
	Hierarchical Structure of Proteins	2	1	3
	Four Levels of Structure Determine the Shape of Proteins	2	1	3
	Molecular biology of the cell:			
	Nucleic Acids, the Genetic Code, and the Synthesis of Macromolecules	2	1	3
	Molecular Structure of Genes and Chromosomes	2	1	3
	RNA Processing, Nuclear Transport, and Post-Transcriptional Control	4	2	6
	DNA Replication, Repair, and Recombination	2	1	3
	Gene cloning and engineering	2	1	3
	Genetic Analysis in Cell Biology	2	1	3
	Protein Sorting: Organelle Biogenesis and Protein Secretion	2	1	3
	Total	26	13	39

3- Teaching and learning methods

3.1 Lectures

3.2 Tutorials and discussions

3.3 Practical

4- Student assessment methods

4.1 Written to assess **ILOs a,b.**
4.2 Practical to assess **ILOs c**
4.3 Oral to assess **ILOs b,e**

5- Assessment schedule

Assessment : midterm examination at 6th and 12th weeks, final examination at 14th and 15th Week

6- Weighting of assessments

Mid term exam ……30%
Final-term examination Written… 30%
Oral examination …….. 15%
Practical examination……15%
Semester work 10%
Total ……100 %

Any formative only assessments:

7- List of references

7.1- Course notes

7.2- Essential books (text books)

7.3- Recommended books

Karp, Gerald. 2008. Cell and Molecular Biology: Concepts and Experiments. John Wiley and Sons, Inc. 5th Ed. www.wiley.com/college/karp (online access to course textbook)

Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K. and Walter, P. 2008. Molecular Biology of The Cell, 5th Ed. Garland Science

7.4- Periodicals, Web sites, etc

8- Other Resources / Facilities required for teaching and learning to achieve the above ILOs
(for example, Field trips)

9- We certify that all of the information required to deliver this course is contained in the above specification and will be implemented

Course coordinator:

Name: Prof Dr. .

Signature:…….....Date ……..

Head of Department of Biology

Name: Prof.

Signature:……Date ……..

- Introduction to Embryology

Introduction to Embryology

A-General information about the course

1	**Course Title**	**Introduction to Embryology**
2	**Course Code**	**LM 128**
3	**Credit hours**	**2h (2h theoretical + 0h practical)**
4	**Academic Year**	**First Year- Second semester**
5	**Program**	**Laboratory Medicine**
6	**Department**	**Bioloy**
7	**Study System**	**semester**
8	**Teaching Language**	**English**
9	**Pre-requisites**	**Medical terminology**
10	**Co-requisites**	**None**
11	**Allocated Marks**	**100**
12	**Course duration**	**15 weeks**
	Date of specification/revision:	

B- Professional Information

1-Overall aims of course:

To provide the students with to acquire the basic knowledge of normal human development from the time of fertilization till birth, and to understand the developmental basis of the common congenital anomalies.

2 - Intended learning outcomes of course (ILOs)

a- Knowledge and Understanding:

After completing this course the students will be able to:

a1-display knowledge and understanding of fertilization, cleavage and implantation.

a2-Reveal an understanding of in Vitro Fertilization (IVF).

a3-recognise the methods of prenatal diagnosis.

a4-describe the developmental basis of each of the vital organs in the human body.

a5-enumerate the teratogenic factors.
a6-list the features of the full term fetus.
a7-Define small and large-to-date babies and their common aetiologies

b- Intellectual Skills

After completing this course the students will be able to:

b-1realise the main autosomal and sex chromosomal aberrations.
b2-analyse the sources, properties, functions and variations of the amniotic fluid.
b3-understand the functions and anomalies of the placenta, and the placental barrier and the placental circulation
b4-diagnose drawings and slides representing common congenital anomalies.
b4-demonstrate the developmental basis of a given congenital anomaly.
b5-show an understanding of embryonic cell differentiation.
b6-analyze the viability of a given embryological statement.

c-Professional and Practical Skills

After completing this course the students will:

1c-respect senior academic/clinical staff
2c-observe professional obligations
3c-cope with ambiguity
4c-appreciate different views and team work
5c-apply the principles of moral reasoning and decision-making to conflicts within and between ethical, legal and professional issues including those raised by economic constrains, and scientific advances

d-General and Transferable Skills

After completing this course the students will:

1d-communicate with colleagues and faculties

2d-demonstrate basic skills and positive attitudes towards teaching others

3d-use appropriate tone of voice

4d-ask open-ended questions and closed questions appropriately

5d-communicate effectively both orally and in writing

6d-give the others the opportunity and time to talk, avoiding interruption

3-course content

	Topics	lecture	practical	
	Introduction to embryology with general structure of the male & female genital system.	2	1	
	Gametogenesis.	1	1	
	Ovarian cycle.	1	1	
	Uterine cycle.	1	1	
	Hormonal cycle.	2	1	
	Fertilization	1	1	
	1st week, cleavage, morula. 2nd week. 3rd week. 4 Development of allantois, yolk sac, umbilical cord, amniotic sac.	4	1	
	Development of the placenta.	1	1	
	Determination of the age of the embryo.	1	1	
	Total	14	9	23

4- Teaching and Learning Methods:

3.1 Lectures
3.2 Tutorials and discussions
3.3 Practical

5- Student Assessment Methods

5.1. ..... to assess .....

5.2. ..... to assess.....

5.3. ..... to assess.....

5.4..... to assess .....

Assessment Schedule

Assessment 1..... Week.....

Assessment 2 ..... week.....

Assessment 3..... Week.....

Assessment 4..... Week.....

5 1-Weighting of Assessments

Mid-Term Examination	%
Final-term Examination	%
Oral Examination.	%
Practical Examination	%
Semester Work	%
Other types of assessment	%
Total	100 %

Any formative only assessments.

6-List of text book and references

Keith L. Moore (Author), T. V. N. Persaud (Author). **Before We Are Born - Essentials of Embryology and Birth Defects.** 7th Edition, Saunders, 2008. ISBN: 1416037055

Electronic Materials, Web Sites etc
• The Human Embryology Website
www. cna.uc.edu/embryology
• Human Embryology Animations& Illustrations
www.indiana.edu/~anat550/embryo_main/

7-Facilities required teaching

-Faculty lectures halls:
-Department lectures halls:
- Audio-visual teaching equipment (Computer,datashow,)
- Models and mannequins
- Datashow, scientific pictures archives.
-Radiology collections &archive

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

Year 2

(28 weeks)

General Parasitology

A–Basic Information

I. General information about the course

1	Course Title	General Parasitology
2	Course Code	LD 221
3	Credit hours	2h (1h theoretical + 1h practical)
4	Academic Year	First Year- Second semester
5	Program	Laboratory Medicine
6	Department	Microbiology
7	Study System	Integrated system
8	Teaching Language	English
9	Pre-requisites	Biology
10	Co-requisites	None
11	Allocated Marks	100
12	Course duration	One Term (One-half Academic Year)
		15 weeks 2 Credit Hours

II–Course Description

This course is designed to enable the student to become acquainted with basic and clinically applied knowledge of parasitic diseases. Students should be able to understand the epidemiology, life cycle, morphology and mechanism of disease caused by each parasite. Parasitic health problems (cases) will be discussed from time to time and to provide diagnostic educational laboratory to the student.

III–Aim of the Course

The aim of this course is to enables the medical students to understand the basic facts, concepts and scientific principles of medical parasitology and medical entomology, that necessary for the practice of medicine

-To provide a diagnostic educational laboratory to the student

-To focus on: applied clinical Parasitology, diagnosis, prevention and control of the different parasitic infections.

To be aware of basic epidemiological and environmental factors in relation to parasitic infections with special emphasis on local endemicity.

B-Intended Learning Outcomes (ILOs):

2.1. Knowledgeand understanding:

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

2.1.1. Define parasite 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.

5:Classify different helminthic parasitic infections.

6:Explain diagnostic methods (direct and indirect) treatment, prevention and control of helminthic parasitic diseases.

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. Analyse case scenario of parasitic infections to reach proper diagnosis.

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 health care professionals regardless their degrees or rank (top management, sub ordinate 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.

2.4.General and transferableSkills:

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:

	Topic			
1	**Introduction to parasitology**	**2**	**1**	**3**
A	**Helminth immunology:** immune respons , pathology, immunodiagnosis	**2**	**1**	**3**
1	**a-CLASS: TREMATODA** (1. Describe detailed Principles of Clinical Parasitology: (Life cycle, pathogenesis and laboratory diagnosis of:)	**5**	**3**	**8**
	-Introduction -Schistosomes -Snails -Fasciola -Heterophyes **CASE**			
2	**Class : NEMATODA** (1. Describe detailed Principles of Clinical Parasitology: (Life cycle, pathogenesis and laboratory diagnosis of)	**5**	**3**	**8**
	Introduction, Entrobius Ascaris and Toxocara Hookworm,Trichostrongylus Strongyloides, larva migrans Trichuris, Clinical cases Trichinella Filaria ; immunity Case study			
3	**CLASS: CESTODA** (1. Describe detailed Principles of Clinical Parasitology:(Life cycle, pathogenesis and laboratory diagnosis of)	**6**	**3**	**9**
	Introduction Diphyllobothrium; sparganosis Taenia, cysticercosis Hymenolepis and Dipylidium Echinococcus, Hydatidosis Case study Revision			
B	**Protozoa: Introduction**	**6**	**3**	**9**
1	**Amoeba & ciliates**			
	-Entamoeba SPP (**histolytica & Coli)**			

	Balantidium & clinical cases			
2	**Flagellates**			
	Giardia ; Trichomonas vaginalis - Leishmania Trypanosoma			
3	**Sporozoa**			
	Plasmodium Toxoplasma Cryptospordium			
C	**- Entomology: introduction**	**4**	**2**	**6**
	- Mosquitoes - Flies - Fleas			
	- Ticks - Mites - Lice			
	Total	**30**		**45**

4- Teaching and learning methods:

METHODS USED:

- Modified lectures.
- Small group discussions.
- Self learning.
- Practical classes.

TEACHING PLAN:

Lectures: teaching hours

Practical classes: teaching hours

Time plan: Item	Time schedule	Total teaching hours	Credit hours
Lectures	2 lectures/week; one hour each		2
Practical	2 hours / 15 week		1
Total	**hrs/week**		**3**

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA: Faculty bylaws

1. Practical attendance.
2. lectures attendance.
3. Log book.
4. Formative assessment by Quiz tests.

5-B) Assessment TOOLS:

Tool	Purpose (ILOs)
Written examination	To assess knowledge , understanding and intellectual skills.
Oral examination	To assess knowledge, skills and intellectual functions, and attitude.
Practical examination	To assess knowledge, professional skills and attitude.

5-C) TIME SCHEDULE: Faculty bylaw

Exam	Week
1- midterm exam	7th
2- Practical exam	15th
3- Final exam	End of the term
4- Oral exam	End of the term

5-D) Weighting System:

Examination	Marks allocated	% of Total Marks
3- Mid-term	12	16%
5- Final exam: a- Written b- Practical c- Oral	37.5 15 5	50% 20% 6.7%
6- Assignments & other activities	5.5	7.3%
Total	**75**	

FORMATIVE ASSESSMENT:

Student knows his marks after the Formative exams.

5-E) Examinations description:

Examination	Description
1- Shock exams	Quizzes
3- Mid-year	Objective questions, problem solving and case studies
5- Final exam: a- Written b- c- Practical d- Oral	- Objective questions, short essay questions problem solving and case studies. - OSPE exam. using microscopic slides and data show pictures, boxes and snails. - Two sessions.
6- Assignments & other activities	- Assignments, projects, practical books etc
Total	**75 marks**

6- List of references:

6.1- **Basic Materials:**

-Medical Parasitology-Lecture Notes, authorized by the Department.

-Parasitology Atlas.

-CD for practical course.

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: WB Saunders, 2003.

6.4- **Websites:**

- http://www.epu-eg.com/
- 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 White Board and its requirements.

Laser points.

Well equipped laboratories.

Sixty binocular microscopes with plan achromate lenses 6x, 10x, 40x and 100x.

Four sets of microscopic slides for demonstration.

Refrigerator and deep Freezer.

Four centrifuges.

Well equipped Video rooms and Video films, slide projector and projector slide sets.

All laboratory requirements for performing the practical work (including chemicals, stains, disposable materials, glass wares, gloves and disinfectants) in sufficient amounts for the use of the huge number of students (500 students).

In addition to, providing **ample time** and **more grades** to be allocated for the new activities (e.g. research assignment and additional practical work) for the execution of all the goals.

Course coordinator:

Head of the Department:

Date: 9/20

Practical Medical Parasitology (1)

Duration :7 week
Credit hours practical : 2
Level :2
Term :1

Course description :
Study life cycles of human parasites of medical significance. Identify epidemiology associated with human parasitic disease. Examine specimen collection. Transportation and laboratory methods used to detect and identify the parasites study of morphology of parasites, classification ,microscopic examination .

Objectives:
Upon completion of this course the student will be able to:

1. understand the important of parasitology in field of laboratory.
2. known all types of parasites
3. known the investigation of parasites.
4. understand the classification of parasites.
5. discuss life cycle, which includes the intermediate host, the infective and diagnostic stages, mode of transmission.
6. identify the pathogenesis: general idea about the sign and symptoms and the course of disease caused by the parasites.
7. diagnosis: methods of laboratory diagnosis.
8. apply preventive and control measures.

Course content

NO	TOPICS	HRS
1	Instrumentation, staining, reagent preparation (definition of stool and abnormal content, carrying out methods of collection, containers, transport, and preservatives specimen)	6
2	Preservation of faecal specimens, examination of stool specimens a-Macroscopic examination.	6

	b- Microscopic examination. c-Direct smear method.	
3	Concentration methods these include a-Normal Saline sedimentation. b-Formal ethyl-acetate sedimentation. c-Zinc Sulphate Floatation.	6
4	Examination of urine for parasites: study life cycle, which includes the intermediate host, the infective and diagnostic stages, mode of transmission and Microscopic Examination for: a-Schistosoma hematobium b-Schistosoma mansoni c-Faseiola hepatica	6
5	Study life cycle, which includes the intermediate host, the infective and diagnostic stages, mode of transmission and Microscopic Examination for: a-Taenia segnata b-Taenia solium c-Hymenolepis nana	6
6	Study life cycle, which includes the intermediate host, the infective and diagnostic stages, mode of transmission and Microscopic Examination for: a-Ascaris lumbricoides b-Enterobius vermocularis c-Trichuris trichura d-Ancylostoma duodenale e-Strongyloides sterogenalis f-Filaria types	6
7	Special techniques for stool examination a-Occult blood in stool b-Scotch tape method	6
8	Lab diagnosis of parasites on sample	6
	Total	48

Done by Eman Ahmed AL-Dawa'a

Practical Medical Parasitology (2)

Duration :14 week
Credit hours practical :2
Level :2
Term :2

Course description :
Study life cycles of human parasites of medical significance. Identify epidemiology associated with human parasitic disease. Examine specimen collection. Transportation and laboratory methods used to detect and identify the parasites study of morphology of parasites, classification ,microscopic examination .

Objectives:
Upon completion of this course the student will be able to:

1. Understand the important of parasitology in field of laboratory.
2. Known all types of parasites
3. Known the investigation of parasites.
4. Understand the classification of parasites.
5. Discuss life cycle, which includes the intermediate host, the infective and Diagnostic stages, mode of transmission.
6. Identify the pathogenesis: general idea about the signe and symptoms and the Course of disease caused by the parasites.
7. Diagnosis: methods of laboratory diagnosis.
8. Apply preventive and control measures.

Course content

NO	TOPICS	HRS
1	Instrumentation, staining, reagent preparation (definition of stool and abnormal content, carrying out methods of collection, containers, transport, and preservatives specimen)	4
2	Type of specimens, examination of stool specimens a-Macroscopic examination. b- Microscopic examination. c-Direct smear method.	4
3	Study life cycle, which includes the intermediate host, the infective and diagnostic stages, mode of transmission and Microscopic Examination for: a-Entamobea spp. b-Giardia lamblia.	6
4	Study life cycle, which includes the intermediate host,	6

	the infective and diagnostic stages, mode of transmission and Method for: Trichomonas vaginalis.	
5	Study classification, life cycle, which includes the intermediate host, the infective and diagnostic stages, mode of transmission and Microscopic Examination for: Leishmanias,	8
6	Study life cycle, which includes the intermediate host, the infective and diagnostic stages, mode of transmission and Microscopic Examination for: Trypanosoma.	6
7	Study classification, life cycle, which includes the intermediate host, the infective and diagnostic stages, mode of transmission and Microscopic Examination for: Malaria parasites(preparation of thick and thin films)	8
8	Study life cycle, which includes the intermediate host, the infective and diagnostic stages, mode of transmission and Microscopic Examination for: Toxoplasma gondei	6
	Total	48

Done by Eman Ahmed AL-Dawa'a

Microbiology I

1	Course Title	Microbiology I
2	Course Code	LM 21
3	Credit hours	6h (4h theoretical + 2h practical)
4	Academic Year	Second Year- First semester
5	Program	Laboratory Medicine
	Department	Pathology
6	Study System	Integrated system
7	Teaching Language	English
8	Pre-requisites	Biochemistry; Gross Anatomy; Histology; Physiology
9	Co-requisites	None
10	Allocated Marks	300
11	Course duration	15 weeks

B-Professional Information:

1-Program Aims:

1- Overall Aim of the Course:

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) for program

a- Knowledge and Understanding:

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

1-describe general bacterial morphology, microbial physiology, genetics and the basis of molecular biology.
2. Mention the principles of growing and cultivating microorganisms
3. summarize the host parasite relationship and microbial pathogenesis.
4. enumerate s the basics of antimicrobial chemotherapy and resistance, their mode of action, application and complications in vivo.
5. list the principles and methods of decontamination and sterilization.

6. list RNA viruses of medical importance with emphasis on: morphology, culture, antigenic structure, virulence, pathogenesis, clinical diseases they caused, diagnosis, treatment, prevention and control.
7- Differentiate between eukaryote and prokaryote cells and the importance of the morphological difference in disease and diagnosis of infections.

b- Intellectual Skills

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

1. Categorize a microorganism as a bacterium, virus or fungus according to standard taxonomy.
2. Differentiate between physical and chemical methods of sterilization.
3. determine the appropriate antimicrobial used in treatment different infections.
4. Determine the appropriate clinical sample suitable for each disease.
5. Appreciate the danger of handling and use of infectious agents on community and environment and those with dangerous infectious diseases as a part of their ethical heritage.

c-Professional and practical Skills:

1. Perform and distinguish the results of Gram staining and Ziehl-Neelsen staining and microscopic examination of stained preparations
2. Identify different microbial culture media.
3. Identify the biochemical and serological tests commonly used for bacterial identification and distinguish positive and negative results.

d- General and Transferable Skills

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

1. Evaluate the risk of disseminating infections in the hospital and community through other cases, carriers or even healthcare workers during manipulating and handling infectious material.
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.
3. Present information clearly in written, electronic and oral forms.

3-Course contents:

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
Microbiology I	**Introduction to Microbiology** • Definitions • Classifications • Prokaryotes & eukaryotes • Effect of microorganisms on human life	2	2	

	Bacterial morphology • Shape of bacteria • Their size • Their arrangements • Nomenclature of bacteria	1	2	
	Bacterial cell structure • Structures internal to cell wall • Cell wall structures • Structures external to the cell wall • Wall-less bacteria.	3	2	
	Normal microbiota: • Types of normal flora • Function of normal flora. • Factors influence normal flora	1	2	
	Bacterial replication and spore formation: • Binary fission • Endospore formation	2	2	
	Bacterial metabolism: • Catabolic and anabolic reactions.	1		
	Bacterial staining procedures • Principles of basic stains and differential stains	2	2	
	Bacterial growth: • Requirements for growth • Culture media • Obtaining pure culture • Bacterial growth curve	4		
	Biochemical tests • Principles of biochemical tests	2		
	Control of microbial growth • Terminology of microbial control • Physical methods of microbial control • Chemical methods of microbial control	2		
	• Antimicrobial chemotherapy	4		
	Bacterial pathogenesis: • Bacterial infectivity • Virulence factors • Host resistance	2		
	Bacterial genetics: • Mutation and selection • Exchange of genetic Information • Recombinant DNA and gene.	2		

4- Teaching and learning methods:
METHODS USED:
- Modified lectures.
- Small group discussions.
- Self learning.
- Practical classes.

TEACHING PLAN:
Lectures: teaching hours
Practical classes: teaching hours

Time plan: Item	Time schedule	Total teaching hours	Credit hours
Lectures	2 lectures/week; one hour each		2
Practical	2 hours / 15 week		1
Total	**hrs/week**		**3**

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA: Faculty bylaws
1. Practical attendance.
2. lectures attendance.
3. Log book.
4. Formative assessment by Quiz tests.

5-B) Assessment TOOLS:

Tool	Purpose (ILOs)
Written examination	To assess knowledge , understanding and intellectual skills.
Oral examination	To assess knowledge, skills and intellectual functions, and attitude.
Practical examination	To assess knowledge, professional skills and attitude.

5-C) TIME SCHEDULE: Faculty bylaw

Exam	Week
1- midterm exam	7th
2- Practical exam	15th
3- Final exam	End of the term
4- Oral exam	End of the term

5-D) Weighting System:

Examination	Marks allocated	% of Total Marks
3- Mid-term	12	16%
5- Final exam: a- Written b- Practical c- Oral	37.5 15 5	50% 20% 6.7%
6- Assignments & other activities	5.5	7.3%
Total	**75**	

FORMATIVE ASSESSMENT:
Student knows his marks after the Formative exams.

5-E) Examinations description:

Examination	Description
1- Shock exams	Quizzes
3- Mid-year	Objective questions, problem solving and case studies
5- Final exam: a- Written b- c- Practical d- Oral	- Objective questions , short essay questions problem solving and case studies. - OSPE exam. using microscopic slides and data show pictures, boxes and snails. - Two sessions.
6- Assignments & other activities	- Assignments, projects, practical books etc
Total	**75 marks**

6- List of references:

6.1- **Basic Materials**:

6.2- **Essential books**:

6.3- **Recommended books:**

6.4- **Websites:**

- http://www.epu-eg.com/

7- Facilities required for teaching and learning

Proper lecture rooms.
Computers and data show.
Electronic White Board and its requirements.
Laser points.
Well equipped laboratories.
Sixty binocular microscopes with planachromate lenses 6x, 10x, 40x and 100x.
Four sets of microscopic slides for demonstration.
Refrigerator and deep Freezer.
Four centrifuges.
Well equipped Video rooms and Video films, slide projector and projector slide sets.
All laboratory requirements for performing the practical work (including chemicals, stains, disposable materials, glass wares, gloves and disinfectants) in sufficient amounts for the use of the huge number of students (500 students).
In addition to, providing **ample time** and **more grades** to be allocated for the new activities (e.g. research assignment and additional practical work) for the execution of all the goals.

Course coordinator:
Head of the Department:
Date: 9/20

General pathology

I. General information about the course

1	**Course Title**	**General Pathology**
2	**Course Code**	
3	**Credit hours**	**6h (4h theoretical + 2h practical)**
4	**Academic Year**	**Second Year- First semester**
5	**Program**	**Laboratory Medicine**
	Department	**Pathology**
6	**Study System**	**Integrated system**
7	**Teaching Language**	**English**
8	**Pre-requisites**	**Biochemistry; Gross Anatomy; Histology; Physiology**
9	**Co-requisites**	**None**
10	**Allocated Marks**	**300**
11	**Course duration**	**15 weeks**

II. Course description:

Pathology course forms the basis for clinical medicine. It is designed to enable students to become familiar with etiologies and mechanisms of various diseases and about structural and functional changes that takes place in diseases to help them understand of a disease process. This course is also designed to develop proper understanding of the main clinical manifestations that occur in disease through clinicopathological correlation.

III. Course Aims:

Pathology course aims to

1- Familiarize students with fundamental base disease processes

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.

3- Provide the students with practical skills needed for macroscopically identification of different pathological lesions.

4- Provide the students with practical skills needed for macroscopically identification of different pathological lesions.

III. Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

After completing this course, students would be able to:

a1. Mention different causes, mechanisms, effects, types of cell injury and morphology (gross & microscopic) of tissues affected.

a2. 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.
a3. Describe types of stem cells and different processes of repair.
a4. Explain the basic facts of immunopathology as well as the basic mechanisms underlying different immunological disorders affecting the body.
a5. Define and explain the mechanisms of different circulatory disturbances, their complications and morphology (gross & microscopic) of tissues affected.
a6. Summarize disorders of growth including neoplasia, its basic facts and concepts, examples for different types of tumor.
a7. Mention the basis of genetic disorders and its contributions in various disease processes.

B- Intellectual skills

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

b1. Interpret pathology reports.
b2. Integrate requested data for histopathological examination
b3. Analyze data to suggest diagnosis
b4. Combine the obtained information to diagnose a particular clinical problem according to the principles of evidence-based medicine.
b5. Differentiate between related pathological disorders affecting body
b6. Solve related medical problems through frequent case studies

C- Professional and practical skills

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

c1. Examine the macroscopic and microscopic criteria of the altered tissue.
c2. Use the light microscope to examine and identify microscopic findings of some selected examples of studied diseases.
c3. Write a pathological request concerning main features of gross appearance of the specimen.
c4. Write a pathological report.

D- General and Transferable Skills

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

d1. Respect academic/medical staff and colleagues
d2. Work effectively both in a team and independently.
d3. Communicate ideas and arguments effectively.
d4. Present the medical information in written, oral or electronic forms.
d5. Use the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

IV. Course content

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
Pathology	**Introduction to pathology:** Role of pathology in the diagnosis of diseases	1	2	3
	Cellular response to injury: • Cell injury (Etiology, mechanism & morphology. • Necrosis & apoptosis. • Pathologic calcification & pigmentation. • Cellular adaptation & aging.	4	2	6

	Acute inflammation: • Definition, signs, components & mechanism • Chemical mediators of inflammation. • Outcomes. • Systemic effect of inflammation. • Defects in leukocyte function.	2	2	4
	Chronic inflammation: • Definition, causes, mechanism & morphology. • Granulomatous inflammation. • Morphologic patterns in inflammation. • Role of lymphatic in inflammation.	1	2	3
	Cell Regeneration, healing & repair. Scar & keloid	1	2	3
	Homodynamic forces & edema: • Definition. • Pathophysiologic categories. • Hyperemia & congestion.	1		1
	Hemostasis & coagulation • components of hemostasis. • Thrombosis. • Embolization. • Infarction.	3	2	5
	Total	24	12	36

V- Teaching methods

1-	Lectures
2-	Lab classes
3-	Group discussion
4-	Problem solving
5-	Presentation
6-	Reports
7-	assignment

V. Tasks and Assignments

No.	Assessment task	Week due	Proportion of final assessment
1	Quiz 1	Week 4	8%
2	Mid exam	Week 8	20
3	Quiz 2	Week 12	8%
4	Attendance	All weeks	4%
5	Assignments	During the block	10%
6	Practical exam	According to the group	50%
7	Final Exam	End of the block	50%

VI. Learning Resources

Essential books

1- Cotran RS, Kumar V, Collin T, Robbins SL. Robbins Pathologic Basis of Disease: 6th Sub Edition, W.B.Sunders Co. Philadelphia, London, Toronto, Montreal, Sydney, Tokyo, 1999. ISBN-10: 072167335
2- Rubin E, Farber JL. Pathology: 3rd Edition, Lippincott Raven, 1998. ISBN 0397584229

Websites

www.webpathology.com

Basic Immunology

I. General information about the course

1	**Course Title**	**Basic Immunology**
2	**Course Code**	LM
3	**Credit hours**	**1h (1h theoretical + 0h practical)**
4	**Academic Year**	**Second Year- First semester**
5	**Program**	**Laboratory Medicine**
	Department	**Microbiology**
6	**Study System**	**Integrated system**
7	**Teaching Language**	**English**
8	**Pre-requisites**	**None**
9	**Co-requisites**	**None**
10	**Allocated Marks**	**150**
11	**Course duration**	**15 weeks**

II. Course description:

Basic immunology course describes the components of the immune system and explains the mechanisms of defenses by innate and adaptive immunity

III. Course Aims:

Basic immunology course aims to

- Enable students to describe how immune system protects body from harmful microbes found in the environment

III. Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

After completing this course, students would be able to:

a1. Enumerate the characteristics of both innate and acquired immunity.
a2. Describe the mechanism of defense by phagocytic cells and natural killer cells
a3. Explain the development and maturation of T and B cells.
a4. Explain the different pathways for complement activation
a5. Describe antibody structure, function and function.
a6. List the characteristics of each antibody isotype.
a7. Describe the mechanisms of cell-mediated immunity.

B- Intellectual skills

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

b1. Compare and contrast between innate and adaptive immunity.
b2. Tell differences between antigen, immunogen and hapten
b3. Analyze how acquired immunity affects innate immunity and *vice versa*

C- Professional and practical skills

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

c1. Identify cells of innate and acquired immunity.
c2. Perform phagocytosis test.
c3. Perform agglutination tests, immunochromatographic assays, ELISA test

c4. Write a immunological reports.

D- General and Transferable Skills

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

d1. Respect academic/medical staff and colleagues
d2. Work effectively both in a team and independently.
d3. Communicate ideas and arguments effectively.
d4. Present the medical information in written, oral or electronic forms.
d5. Use the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

IV. Course content

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
Basic Immunology	history of immunology	2		
	Type of immune response Introduction of basic immunology: Innate Immunity Adaptive Immunity. Mechanisms of innate immunity • Physical barriers • Chemical barriers • Biological barriers • Lysozymes, defensins • Cellular Acute phase proteins	4		
	The basic elements of immune systems including lymphoid tissues/organs and cells with immune functions; Cells & Organs of the Immune system Maturation and development of T and B lymphocytes	2 2		
	Antigens, immunogens and haptens Factors that affect immunogenicity	2		

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
	Complement system	2		
	Leukocytes migration to the site of infection	1		
	Chemotaxis and phagocytosis	1		
	Cytolysis by natural killer cells	1		
	Complement system	2		
	Antibody structure, function and production	2		
	Antibody isotypes	1		
	Cell Mediated Immunity.	2		
	Major histocompatibility complex	2		
	Antigen processing and presentation	2		
clinical aspects of immunology including : microbial immunity, hypersensitivities immune--- mediated diseases, Tolerance immune deficiencies and other disorders, tumor immunity, transplantation immunology, immunodiagnosis, immunoprophylaxis immunotherapy.		**2** **2** **1** **1**		
Total		**34**		

V- Teaching methods

1-	Lectures
2-	Lab classes
3-	Group discussion
4-	Problem solving
5-	Presentation
6-	Reports
7-	assignment

V. Tasks and Assignments

No.	Assessment task	Week due	Proportion of final assessment

1	Quiz 1	Week 4	8%
2	Mid exam	Week 8	20
3	Quiz 2	Week 12	8%
4	Attendance	All weeks	4%
5	Assignments	During the block	10%
6	Practical exam	According to the group	50%
7	Final Exam	End of the block	50%

VI. Learning Resources

Essential books

- Abul K. Abbas, Andrew Lichtman. Cellular and Molecular Immunology, 8th edition. Saunders, 2015.
- Murphy, Travers, Walport. Janeway's Immunobiology; 8th edition. Garland Science, 2012

Websites

http://www.immunology.org.au/
http://www.iuisonline.org/

General Pharmacology

I. General information about the course

1	**Course Title**	**General Pharmacology**
2	**Course Code**	
3	**Credit hours**	**5h (4h theoretical + 1h practical)**
4	**Academic Year**	**First Year- Second semester**
5	**Program**	**Laboratory Medicine**
6	**Department**	**Pharmacology**
7	**Study System**	**Integrated system**
8	**Teaching Language**	**English**
9	**Pre-requisites**	**Anatomy, physiology, histology**
10	**Co-requisites**	**None**
11	**Allocated Marks**	**250**
12	**Course duration**	**15 weeks**

II. Course Description

General pharmacology course focuses on the pharmacological management of most common diseases.

III. Course Aims:

General pharmacology course aims to

1- Provide the basic knowledge about commonly used groups of drugs affecting different body systems.

2- Enable students to understand the safe use of drugs as regards adverse effects, contraindications and drug interactions.

III. Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

After completing this course, students would be able to:

a1. Define different terms in pharmacology.

a2. Explain the basis of pharmacokinetics and pharmacodynamics of different drugs.

a3. Identify the mechanisms of action, therapeutic uses and adverse effects of commonly used and life-saving drugs.

a4. State the limitations to use of drugs (drug interactions and contraindications).

a5. Identify the prophylactic use of drugs for the preventive care of both individual and community

B- Intellectual skills

b1. Select properly the drugs suitable for different patient populations (renal, hepatic, pediatric, geriatrics, pregnancy)

b2. Deduce the appropriate dosage form and the appropriate route of administration of drugs in different medical situations.

b3. Compare between different classes of drugs of the same family favoring its selection criteria in a certain medical situation.

b4. Predict beneficial and harmful drug interaction in cases of multiple drug administration.

C- Professional and practical skills
c1. Prescribe appropriate drugs dosage based on patient's weight, age and health conditions.
c2. Report adverse drug reactions.

D- General and Transferable Skills
d1. Respect academic/medical staff and colleagues
d2. Work effectively both in a team and independently.
d3. Communicate ideas and arguments effectively.
d4. Present the medical information in written, oral or electronic forms.
d5. Use the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

IV- Course content

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
Pharmacology	**Introduction of pharmacology:** • Drug receptors & Pharmacodynamics • Route of drug administration • Pharmacokinetic of drugs • Drug-protein binding • Adverse drug reaction • Drug-drug interaction • Some important pharmacological terms.	6	2	
	Autonomic Nervous System (A.N.S): • Introduction of A.N.S • Sympathomimetic agents. • Sympatholytic agents. • Parasympathomimetic agents. • Parasympaholytic agents. Ganglion blocking & stimulating agents.	8	2	
	Autocoids: • Histamine & antihistamines • Serotonin & drugs acting on its receptors. Prostaglandins & therapeutic uses of their analogs.	4	2	
	Chemotherapeutic drugs: A) Antibacerial agents: • Lactam antibiotics & other inhibitors of cell wall synthesis. • Chloramphinicol, Tetracyclines, Macrolides and Clindamycin. • Aminoglycosides • Sulfonamides, Trimethoprim and Quinolones B) Antifungal agents.	8	2	
Total		**26**	**8**	**34**

V- Teaching methods

1-	Lectures
2-	Lab classes
3-	Group discussion
4-	Problem solving
5-	Presentation
6-	Reports
7-	assignment

V. Tasks and Assignments

No.	Assessment task	Week due	Proportion of final assessment
1	Quiz 1	Week 4	8%
2	Mid exam	Week 8	20
3	Quiz 2	Week 12	8%
4	Attendance	All weeks	4%
5	Assignments	During the block	10%
6	Practical exam	According to the group	50%
7	Final Exam	End of the block	50%

VI. Learning Resources

Essential books

- Katzung, Masters & Trevor. Basic and Clinical Pharmacology, McGraw-Hill Medical (2009).
- Finkel, Clark, Champe and Cubeddu. Lippincott's Illustrated Reviews: Pharmacology, Lippincott Williams & Wilkins (2008).

Websites

http://www.fda.gov/
http://www.mhra.gov.uk/index.htm

Primary Health Care

Duration (W): 14 + 1 (Exam)
Credit hours: 3

Course Specification

I. Course Identification and General Information:						
1	**Course Title:**	**Primary Health Care**				
2	**Course Code &Number:**	**LM**				
3	**Credit hours: 2**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		2	-	-		2
4	**Study level/ semester at which this course is offered:**	Second year/ ferst semester				
5	**Pre –requisite:**	-				
6	**Co –requisite :**	-				
7	**Program (s) in which the course is offered:**	Nursing				
8	**Language of teaching the course:**	English				
9	**Location of teaching the course:**	College of nursing				
10	**Prepared By:**					
11	**Date of Approval**					

II. Course Description:
This course introduces students to the concept, components and principles of PHC, conference of Alma-Ata and community diagnoses. It also introduces the levels of HC, health care system and health care delivery.

III. Intended learning outcomes of the course (ILCOs)
1. Define health, illness and wellness. 2. Identify concept, components and principles of primary health care and health care. 3. State millennium development goals and indicators. 4. Describe the characteristics of health care and levels of health care system. 5. Recognize maternal and child health care and FP and immunizations

schedule
6. Design health education package to client as required and appropriate to their specific needs

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Define health, illness.	Lecture Discussion	Essay type Short answer Objective type
a1. Identify concept, components and principles of primary health care and health care.	Lecture Discussion	Essay type Short answer Objective type
a2.State millennium development goals and indicators.	Lecture Discussion	Essay type Short answer Objective type
a3. Describe the characteristics of health care and levels of health care system.	Lecture Discussion	Essay type Short answer Objective type

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1.Design health education package to client as required and appropriate to their specific needs	Lecture Discussion	Essay type Short answer Objective type
b2.Recognize maternal and child health care and FP and immunizations schedule	Lecture Discussion	Essay type Short answer Objective type

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
Not applicable	-	-

(D) Alignment Course Intended Learning Outcomes of General and Transferable Skillsto Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
Not applicable	-	-

Course Content:

A – Theoretical Aspect:				
Order	**Units/Topics List**	**Sub Topics List**	**No. of Weeks**	**Contact hours**
1	Concept of Health and Illness	▪ Definition of health, illness and wellness ▪ Dimensions of health/wellness ▪ Different Models of Health ▪ Determinants of Health o Biological o Nutrition o Lifestyle o Environmental o Behavioural o Socio-economic o Health services o Aging o Gender o Genetic	1	2
2	Introduction to health care	▪ Definition of health care ▪ Characteristics of health care ▪ Health team concept ▪ Roles of primary health care workers: o Facilitate role o Development role o Supportive role o Clinical role o Levels of health care ▪ Levels of health care o Primary care level o Secondary care level o Tertiary care level ▪ Changing concepts o Comprehensive health care o Basic health services ▪ Primary health care	1	2
3	Primary health care	▪ Alma-Ata declaration ▪ Definition of Primary health care and clarification on certain terms in the definition:Essential, Scientifically sound, Socially acceptable methods and	1	2

		technology , Universally accessible, Community involvement ▪ Importance of Primary health care ▪ Major Problems in implementation of PHC ▪ The role of the primary care practitioner		
4	Principles of PHC	• Acceptability • Public participation • Intersectoral collaboration • Appropriate technology • Health promotion and illness prevention	1	2
5	Elements of PHC	• Health education concerning prevailing health problems and the methods of preventing and controlling them. • Promotion of food supply and proper nutrition. • An adequate supply of safe water and basic sanitation. • Maternal and child health care, including family planning. • Immunization against the major infectious diseases. • Prevention and control of locally endemic diseases. • Appropriate treatment of common diseases and injuries. • Provision of essential drugs. • Mental health • Oral health • Control of ARI • Control of HIV/AIDS and other STIs • Occupational health • Use of traditional medicine	1	2
6	Health For All	▪ Introduction ▪ Definition	1	2

		▪ Strategies for HFA in 2000 and after		
7	Midterm exam		1	2
8	Millennium development goals (MDG)	▪ Introduction ▪ Concept and definition of MDG indicators	1	2
9	Health Care Delivery System	• Health care delivery: o Introduction o The model of delivery of health care services • Health Care Delivery System: ▪ Definition of Health care delivery system ▪ Types of health care system: o Public care sectors o Private sectors o Indigenous system of medicine ▪ Comparisons of the medical care system and the primary care approach	1	2
10	Health education and Communication skills	▪ Communication and interviewing skills used to deal with individuals, families, and the community ▪ Health education in maternal/child health clinic setting	1	2
11	Antenatal care	• Antenatal care : o Assessment of the antenatal client o Care provision, including counseling and health education		
12	Postpartum care	• Postpartum care: o Assessment of the postpartum mother o Care provision, including counseling and health education	1	2
13	Family planning	• FP services and counseling • Methods of FP	1	2

14	Expanded program on Immunizations	▪ Definition of Immunizations ▪ Preventable diseases of immunization ▪ Schedule of expanded program on immunizations for neonatal in Yemen ▪ Tetanus toxoid vaccination for fertile women ▪ Contraindication for immunization ▪ Cold chain of immunization	1	2
15	Growth monitoring of infants and children	▪ Growth monitoring of infants and children ▪ Proper nutrition and food sanitation	1	2
16	Final exam		1	2
Number of Weeks /and Units Per Semester			**16**	**32**

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Learning Outcomes**
	Not applicable	-	-	-
Number of Weeks /and Units Per Semester				

III. Teaching strategies of the course:

Lecture - Discussion

IV. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	List Health problems in Yemen community.	b1	6-12	5

VII. Schedule of Assessment Tasks for Students During the Semester
Theoretical part

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance and Activities	15th week	5	5%	a1,a2,a3,b1,b2

2	Student assignment	5th and 12th week	5	5%	b1
3	Mid-term exam	7th or 8th week	20	20%	a1,a3
4	Final exam	16th-17th week	70	70 %	a1,a2,a3,b1,b2
	Total Theory Weight		**100**	**100%**	

Clinical part					
Assessment	**Type of Assessment Tasks**	**Week Due**	**Mark**	**Proportion of Final Assessment**	**Aligned Course Learning Outcomes**
	Not applicable	-	-	-	-

V. Learning Resources:

1- Required Textbook(s)

1. Oxford textbook of Public Health Ed (2002). Roger Detels, James Mcewen, Robert Beaglehole, and Heizo Tanaka Oxford University Press (OUP) 4th Edition.
2. K Park (2007). Preventive and Social Medicine, BansaridasBhanot Publishing House.

2- Essential References.

1. Robert Beaglehole and Ruth Bonita (2008). Public Health at the Crossroads – Achievements and Prospects. 2nd Edition Cambridge University Press
2. Maxcy-Rosenau-Last (2008). Public Health & Preventive Medicine (2007). Fourteenth Edition Ed Robert Wallace, MD, et al.

3- Electronic Materials and Web Sites *etc*.

1. http://www.yahoo.com
2. http://www.google.com

VI. Course Policies:

1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** Any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4.	**Assignments &Projects:**Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the

	course. Other disciplinary procedures will be according to the college rules.

Course Content:			
A – Theoretical Aspect:			
Order	**Sub Topics List**	**No. of Weeks**	**Contact hours**
1	▪ Definition of health, illness and wellness ▪ Dimensions of health/wellness ▪ Different Models of Health ▪ Determinants of Health o Biological o Nutrition o Lifestyle o Environmental o Behavioural o Socio-economic o Health services o Aging o Gender o Genetic	1	2
2	▪ Definition of health care ▪ Characteristics of health care ▪ Health team concept ▪ Roles of primary health care workers: o Facilitate role o Development role o Supportive role o Clinical role o Levels of health care ▪ Levels of health care o Primary care level o Secondary care level o Tertiary care level ▪ Changing concepts o Comprehensive health care o Basic health services ▪ Primary health care	1	2
3	▪ Alma-Ata declaration ▪ Definition of Primary health care and clarification on certain terms in the definition:Essential, Scientifically sound, Socially acceptable methods	1	2

	and technology , Universally accessible, Community involvement ▪ Importance of Primary health care ▪ Major Problems in implementation of PHC ▪ The role of the primary care practitioner		
4	• Acceptability • Public participation • Intersectoral collaboration • Appropriate technology • Health promotion and illness prevention	1	2
5	• Health education concerning prevailing health problems and the methods of preventing and controlling them. • Promotion of food supply and proper nutrition. • An adequate supply of safe water and basic sanitation. • Maternal and child health care, including family planning. • Immunization against the major infectious diseases. • Prevention and control of locally endemic diseases. • Appropriate treatment of common diseases and injuries. • Provision of essential drugs. • Mental health • Oral health • Control of ARI • Control of HIV/AIDS and other STIs • Occupational health • Use of traditional medicine	1	2
6	▪ Introduction ▪ Definition ▪ Strategies for HFA in 2000 and after	1	2
7	Midterm exam	1	2
8	▪ Introduction ▪ Concept and definition of MDG indicators	1	2
9	• Health care delivery:	1	2

	○ Introduction ○ The model of delivery of health care services • Health Care Delivery System: ▪ Definition of Health care delivery system ▪ Types of health care system: ○ Public care sectors ○ Private sectors ○ Indigenous system of medicine ▪ Comparisons of the medical care system and the primary care approach		
10	▪ Communication and interviewing skills used to deal with individuals, families, and the community ▪ Health education in maternal/child health clinic setting	1	2
11	• Antenatal care : ○ Assessment of the antenatal client ○ Care provision, including counseling and health education		
12	• Postpartum care: ○ Assessment of the postpartum mother ○ Care provision, including counseling and health education	1	2
13	• FP services and counseling • Methods of FP	1	2
14	▪ Definition of Immunizations ▪ Preventable diseases of immunization ▪ Schedule of expanded program on immunizations for neonatal in Yemen ▪ Tetanus toxoid vaccination for fertile women ▪ Contraindication for immunization ▪ Cold chain of immunization	1	2
15	▪ Growth monitoring of infants and children ▪ Proper nutrition and food sanitation	1	2
16	Final exam	1	2

Number of Weeks /and Units Per Semester	16	32

II. Course Description

This course is designed to enable the student to become acquainted with competences in the fields of family & community medicine, occupational health, epidemiology &research, health promotion, diseases prevention and treatment for individuals in the context of family and community medicine.

III. Course Aims:

To introduce medical students to the advanced facts, concepts and scientific principles of primary health care necessary for the practice of medicine.

III. Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

After completing this course the students will be able to:

a1. Identify concept, components and principles of primary health care and health care.
a2.State millennium development goals and indicators.
a3. Describe the characteristics of health care and levels of health care system.
Intellectual skill
a4: Demonstrate prevalent health problems related to problem medicine.
a5: Illustrate different healthcare programs related to deferent medicine .
a6: Describe various epidemiological strategies and appropriate statistical test.
7a: Identify environmental variables affecting primary health care.
a8:.Identify nutritional assessment in variable liver diseases.

B- Intellectual skills

By the end of the course the post graduate will be able to:

B 1: Integration of resources for program implementation.
B2: Translation of epidemiological findings into recommendations for a specific intervention.
B3. Communicate ideas effectively.
b4.Design health education package to client as required and appropriate to their specific needs
5.Recognize maternal and child health care and FP and immunizations schedule

c. Professional and Practical Skillsto

After completing this course the students will be able to:

analyse and solve a problem related to a health incident/situation and suggest prevention and control measures.
identify and clarify the Organization of Health Services in KSA and outline the steps in the planning, implementation and evaluation of health services.

explain the role of Primary Health Care, explain the concept and principles on which it is based and identify the new goals, challenges and strategies to achieve
"Health-for All" in the 21st century
appraise the aims of Health Education, describe its principles and discuss the
various methods of its delivery.
analyse the types and sources of Environmental hazards, specify their effects on health and describe the methods for their prevention and control.

clarify the importance and uses of medical sociology in the health care process.

D- General and Transferable Skills

By the end of the course the student will be able to:

D1: Express freely and adequately themselves by improving descriptive capabilities and communication skills.
D2: Demonstrate ethical relationship with staff members.
D3: Develop attitudes that will maximize their educational experiences.
D4: Think and respond properly when solving public health problems appropriately address different problems.

	Tobic	Sub divid	lect	
	Concept of Health and Illness	Definition of health, illness and wellness Dimensions of health/wellness Different Models of Health Determinants of Health Biological Nutrition Lifestyle Environmental Behavioural Socio-economic Health services Aging Gender Genetic	1	
	Introduction to health care	Definition of health care Characteristics of health care Health team concept Roles of primary health care workers: Facilitate role Development role Supportive role Clinical role Levels of health care	1	

		Levels of health care Primary care level Secondary care level Tertiary care level Changing concepts Comprehensive health care Basic health services Primary health care		
	Primary health care	Alma-Ata declaration Definition of Primary health care and clarification on certain terms in the definition:Essential, Scientifically sound, Socially acceptable methods and technology , Universally accessible, Community involvement Importance of Primary health care Major Problems in implementation of PHC The role of the primary care practitioner	1	
	Principles of PHC	Acceptability Public participation Intersectoral collaboration Appropriate technology Health promotion and illness prevention	1	
	Elements of PHC	Health education concerning prevailing health problems and the methods of preventing and controlling them. Promotion of food supply and proper nutrition. An adequate supply of safe water and basic sanitation. Maternal and child health care, including family planning. Immunization against the major infectious diseases. Prevention and control of locally endemic diseases. Appropriate treatment of common diseases and injuries. Provision of essential drugs. Mental health Oral health Control of ARI	1	

		Control of HIV/AIDS and 1other STIs Occupational health Use of traditional medicine		
	Health For All	Introduction Definition Strategies for HFA in 2000 and after	1	
	Midterm exam		1	
	Millennium development goals (MDG)	Introduction Concept and definition of MDG indicators	1	
	Health Care Delivery System	Health care delivery: Introduction The model of delivery of health care services Health Care Delivery System: Definition of Health care delivery system Types of health care system: Public care sectors Private sectors Indigenous system of medicine Comparisons of the medical care system and the primary care approach	1	
	Health education and Communication skills	Communication and interviewing skills used to deal with individuals, families, and the community Health education in maternal/child health clinic setting	1	
	Antenatal care	Antenatal care : Assessment of the antenatal client Care provision, including counseling and health education	1	
	Postpartum care	Postpartum care: Assessment of the postpartum mother Care provision, including counseling and health education	1	
	Family planning	FP services and counseling Methods of FP	1	
	Expanded program on Immunizations	Definition of Immunizations Preventable diseases of immunization Schedule of expanded	1	

		program on immunizations for neonatal in Yemen Tetanus toxoid vaccination for fertile women Contraindication for immunization Cold chain of immunization		
	Growth monitoring of infants and children	Growth monitoring of infants and children Proper nutrition and food sanitation	1	
	Total	▪	15	

4- Teaching and learning methods:
METHODS USED:

- Modified lectures.
- Small group discussions.
- Self learning.
- Practical classes.

TEACHING PLAN:
Lectures: teaching hours
Practical classes: teaching hours

Time plan: Item	**Time schedule**	**Total teaching hours**	**Credit hours**
Lectures	2 lectures/week; one hour each		2
Practical	2 hours / 15 week		1
Total	**hrs/week**		**3**

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA: Faculty bylaws

1. Practical attendance.
2. lectures attendance.
3. Log book.
4. Formative assessment by Quiz tests.

5-B) Assessment TOOLS:

Tool	**Purpose (ILOs)**
Written examination	To assess knowledge , understanding and intellectual skills.
Oral examination	To assess knowledge, skills and intellectual functions, and attitude.
Practical examination	To assess knowledge, professional skills and attitude.

5-C) TIME SCHEDULE: Faculty bylaw

Exam	**Week**
1- midterm exam	7th
2- Practical exam	15th

3- Final exam	End of the term
4- Oral exam	End of the term

5-D) Weighting System:

Examination	**Marks allocated**	**% of Total Marks**
3- Mid-term	12	16%
5- Final exam: a- Written b- Practical c- Oral	37.5 15 5	50% 20% 6.7%
6- Assignments & other activities	5.5	7.3%
Total	**75**	

FORMATIVE ASSESSMENT:
Student knows his marks after the Formative exams.

5-E) Examinations description:

Examination	**Description**
1- Shock exams	Quizzes
3- Mid-year	Objective questions, problem solving and case studies
5- Final exam: a- Written b- c- Practical d- Oral	- Objective questions , short essay questions problem solving and case studies. - OSPE exam. using microscopic slides and data show pictures, boxes and snails. - Two sessions.
6- Assignments & other activities	- Assignments, projects, practical books etc
Total	**75 marks**

6- List of references:

6.1- **Basic Materials**:
-Medical Parasitology-Lecture Notes, authorized by the Department.
-Parasitology Atlas.
-CD for practical course.

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: WB Saunders, 2003.

6.4- **Websites:**
- http://www.epu-eg.com/
- 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 White Board and its requirements.
Laser points.
Well equipped laboratories.
Sixty binocular microscopes with planachromate lenses 6x, 10x, 40x and 100x.
Four sets of microscopic slides for demonstration.
Refrigerator and deep Freezer.
Four centrifuges.
Well equipped Video rooms and Video films, slide projector and projector slide sets.
All laboratory requirements for performing the practical work (including chemicals, stains, disposable materials, glass wares, gloves and disinfectants) in sufficient amounts for the use of the huge number of students (500 students).
In addition to, providing **ample time** and **more grades** to be allocated for the new activities (e.g. research assignment and additional practical work) for the execution of all the goals.

Course coordinator:
Head of the Department:
Date: 9/20

General Nutritional

Duration (weeks): 4 + 1 (Exam)
Credit hours: 4

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ lab*	
Biochemistry	**1. Metabolism of carbohydrate**		2	
	• Glycolysis	2		
	• Gluconeogenesis	1		
	• Krebs cycle	1		
	• Glycogenesis	1		
	• Glycogenolysis	1		
	• Metabolism of Galactose and fructose	1		
	• Glucouronic acid pathway	1		
	• Pentose phosphate pathway	2		
	Total	**10**	**2**	**12**
	2. Metabolism of lipids		2	
	• Biosynthesis of fatty acids	1		
	• Biosynthesis of triacylglycerol	1		
	• Hydrolysis of triacylgycerol	1		
	• Oxidation of fatty acids	1		
	• Ketone bodies formation and oxidation	1		
	• Biosynthesis of cholesterol	1		
	• Lipoprotein metabolism	2		
	Total	**8**	**2**	**10**
	3. Metabolism of amino acids		2	
	• Transamination reaction	1		
	• Urea cycle	2		
	• Glucose-alanine cycle	1		
	• Biosynthesis of non-essential amino acids	2		
	• Catabolism of carbon skeleton of amino acids	2		
	• Disorders in amino acid metabolism	2		
	Total	**10**	**2**	**12**
	4. Nucleic acid metabolism			
	• Biosynthesis of purine nucleotides	1		
	• Biosynthesis of pyrimidine nucleotides	1		
	• Catabolism of Purina and pyrimidine	2		
	Total	**4**		**4**
TOTAL		**32**	**6**	**38**

Microbiology (II)

I. General information about the course

1	Course Title	Microbiology II
2	Course Code	MD 221
3	Credit hours	5h (4h theoretical + 1h practical)
4	Academic Year	First Year- Second semester
5	Program	Laboratory Medicine
6	Department	Microbiology
7	Study System	Integrated system
8	Teaching Language	English
9	Pre-requisites	Microbiology I
10	Co-requisites	None
11	Allocated Marks	250
12	Course duration	15 weeks

Systemic bacteriology, virology, mycology & infection control

B) Professional Information:

1- Overall Aim of the Course:

1. To Provide students with the essential knowledge of general bacteriology, virology, microbial genetics and the structure and function of the immune system.
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.

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2- Intended Learning Outcomes (ILOs):

a. Knowledge and understanding:

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

1. describe bacteria of medical importance with emphasis on: morphology, culture, antigenic structure, virulence, pathogenesis, clinical diseases they caused, diagnosis, treatment, prevention and control.
2. list basic characteristics of fungi, clinical picture, diagnosis, and treatment of major mycotic diseases and be aware of the available antifungal drugs and their uses.
3. Point out DNA and RNA viruses of medical importance with emphasis on: morphology, culture, antigenic structure, virulence, pathogenesis, clinical diseases they caused, diagnosis, treatment, prevention and control.
4. Enumerate causative organisms of different clinical cases and understand how to investigate them.
5. Discuss the Nosocomial infections, the important causative agents, sources, their cycles of transmission and methods of their prevention.
6. Mention principles and different methods of the different infection control policies.

d. Intellectual Skills:

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

1. Plan a diagnostic approach of the common infectious clinical conditions with prioritization of the most appropriate and most cost effective tests to be used.
2. Interpret microbiological, serological reports and be able to determine the appropriate antimicrobial used in treatment different infections.
3. Appreciate the danger of handling and use of infectious agents on community and environment and those with dangerous infectious diseases as a part of their ethical heritage.
4. Generate a list of initial diagnostic hypotheses (differential diagnosis) for each problem

C. **Professional and** Practical Skills:

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

1. Identify different organisms according to their microscopic and cultural characters and according to the results of biochemical and serological tests.
2. manage the practical of the basic infection control measures as hand wash, use of different methods of sterilization and disinfection.
3. Identify different methods used in diagnosis of bacterial and fungal diseases

e. General and transferable Skills:

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

1. Evaluate the risk of disseminating infections in the hospital and community through other cases, carriers or even healthcare workers during manipulating and handling infectious material.

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.
3. Present information clearly in written, electronic and oral forms.

3- Course contents:

	Subject	Lecture	pract	
	Staphylococci , streptococci, pneumococci and Neisseria	1		
	Corynebacteria	1	1	
	Bacillus Group	1	1	
	Clostridium	1	1	
	Mycobacteria	1	1	
	Gram negative bacilli	2	1	
	Spirochaetes			
	Rickettsia			
	Chlamydia			
	Miscellaneous organisms			
	Brucella, Haemophilus, Yersinia & Bordetella	2	1	
	Mycoplasma & Actinomycetes	1	1	
	viruses General characters of viruses - Classification of viruses - Lab diagnosis of viral infections - Cultivation of viruses - Bacteriophages. - Retro viruses - HIV, Hepatitis virus , Pox virus , - Picrona virus - Polio - Orthomyxo virus - Influenza - Arbo virus - Chikungunya, Dengue - Herpies and Adeno virus	2	1	
	Hepatitis viruses Oncogenic viruses	1	1	
	.**Mycology** Morphology and Structure of fungi - Classification of fungi - Nutrition and cultivation of fungus - Cutaneous & Sub cutaneous and Systemic Mycosis (in brief) - Lab diagnosis of fungal Infections - Opportunistic fungal infections	2		
	Nosocomial infections and Infection control	1	1	
	Total	16		

4- Teaching and learning methods:

METHODS USED:

- Modified lectures.
- Small group discussions.
- Self learning.
- Practical classes.

TEACHING PLAN:

Lectures: **teaching hours**
Practical classes: **teaching hours**

Time plan: Item	Time schedule	Total teaching hours	Credit hours
Lectures	2 lectures/week; one hour each		2
Practical	2 hours / 15 week		1
Total	**hrs/week**		**3**

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA: Faculty bylaws

1. Practical attendance.
2. lectures attendance.
3. Log book.
4. Formative assessment by Quiz tests.

5-B) Assessment TOOLS:

Tool	Purpose (ILOs)
Written examination	To assess knowledge , understanding and intellectual skills.
Oral examination	To assess knowledge, skills and intellectual functions, and attitude.
Practical examination	To assess knowledge, professional skills and attitude.

5-C) TIME SCHEDULE: Faculty bylaw

Exam	Week
1- midterm exam	7th
2- Practical exam	15th
3- Final exam	End of the term
4- Oral exam	End of the term

5-D) Weighting System:

Examination	Marks allocated	% of Total Marks
3- Mid-term	12	16%
5- Final exam: a- Written b- Practical c- Oral	37.5 15 5	50% 20% 6.7%
6- Assignments & other activities	5.5	7.3%
Total	**75**	

FORMATIVE ASSESSMENT:

Student knows his marks after the Formative exams.

5-E) Examinations description:

Examination	Description
1- Shock exams	Quizzes
3- Mid-year	Objective questions, problem solving and case studies
5- Final exam: a- Written b- c- Practical d- Oral	- Objective questions , short essay questions problem solving and case studies. - OSPE exam. using microscopic slides and data show pictures, boxes and snails. - Two sessions.
6- Assignments & other activities	- Assignments, projects, practical books etc
Total	**75 marks**

6- List of references:

6.1- **Basic Materials**:

-Medical Parasitology-Lecture Notes, authorized by the Department.
-Parasitology Atlas.
-CD for practical course.

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: WB Saunders, 2003.

6.4- **Websites:**

- http://www.epu-eg.com/
- 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 White Board and its requirements.
Laser points.
Well equipped laboratories.
Sixty binocular microscopes with planachromate lenses 6x, 10x, 40x and 100x.
Four sets of microscopic slides for demonstration.
Refrigerator and deep Freezer.
Four centrifuges.
Well equipped Video rooms and Video films, slide projector and projector slide sets.

All laboratory requirements for performing the practical work (including chemicals, stains, disposable materials, glass wares, gloves and disinfectants) in sufficient amounts for the use of the huge number of students (500 students).
In addition to, providing **ample time** and **more grades** to be allocated for the new activities (e.g. research assignment and additional practical work) for the execution of all the goals.

Course coordinator:
Head of the Department:
Date: 9/20

Second Year: Second Semester

Respiratory system

Duration (Weeks): 7 + 1 (Exam)
Credit hours: 7

I. General information about the course

1	**Course Title**	Respiratory System
2	**Course Code**	
3	**Credit hours**	**6h (4h theoretical + 2h practical)**
4	**Academic Year**	**Second Year- First semester**
5	**Program**	**Laboratory Medicine**
6	**Department**	
7	**Study System**	Integrated System Block with PBL
8	**Teaching Language**	**English**
9	**Pre-requisites**	**Anatomy, physiology, histology**
10	**Co-requisites**	**None**
11	**Allocated Marks**	**300**
12	**Course duration**	**weeks**
	Teaching Approaches	Integrated System Block with PBL

B) Professional Information:

1- Overall Aim of 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 yemen community

2- Intended Learning Outcomes (ILOs):

2.a. Knowledge and understanding:

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

2.a.1.**define** different physiologic terminology as (O2content of the blood , O2capacity of the blood , O2% saturation ,alkali reserve , ...etc).

2.a.2. **Describe** physiologic anatomy of respiratory system, surfactant and work of breathing.

2.a.3.**list** difference between inspiration & expiration .

2.a.4.**describe** phases of respiratory cycle and pulmonary ventillation .

2.a.5. **enumerate** lung volume and capacities and factors affecting exchange of gases .

2.a.6.**list** respiratory functions of the blood, hypoxia, cyanosis ,abnormal pattern of breathing, air embolism and artificial respiration.

2.a.7. **explain** mechanism of respiration, respiratory centers and regulation of respiration.

2.b. Professional Attitude and Behavioral kills:

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

2.b.1. **Reflect** a good behavior when facing stressful condition example: oral exams and this is done by continuous discussion throughout the year in the practical lessons and also the written exams and this is done by continuous assessment throughout the year.

2.b.2.**Demonstrate** good relations with colleague: Through dividing the students into small groups sharing the same experiment in practical lessons

2.b.3. **Demonstrate** respect and work effectively as a member or a leader of a team and reflect effective interpersonal relationship to communicate ideas and arguments.

2.b.4. **Demonstrate** respect to superiors and establish a good student- teacher relationship.

2.c. Communication skills: ***By the end of the course the graduate will be able to:***

2.c.2. **Establish** trial for a good presentation in front of his colleagues during scientific discussions.

2.c.3. **Communicate** effectively with individuals regardless of their social, cultural, ethnic backgrounds or their disabilities.

2.c.4. **Cope up** with difficult situations as oral exams and this is done by continuous assessment through practical lessons.

2.c.5. **Respect** all his colleagues and supervisors.

2.d. Intellectual Skills:

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

2.d.1**. Integrate** facts about function of different organs subserving the homeostasis

2.d.2 **analyze** medical problems related to diagnosis & treatment of physiological problems.

2.d.3. **proof** scientific phenomena during the practical study

2.e. General and transferable Skills:

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

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

IV-Course content

	ANATOMY			
	Topic	Lec.	Practical	TOTAL
1	Thoracic cage Thoracic wall (muscles,vessels,nerves and veins).	2	1	3
2	Trachea. Nose. Phargnx. Larynx.	2	1	3
3	Lung. Pleura Diaphragm	2	1	3
4	Nerves of thorax and segmental innervations. Autonomic supply. Lymph drainage Development & Congenital anomalies	2	1	3
	TOTAL	8	4	13

	PHYSIOLOGY			
	Topic	***Lec.***	Practical	**TOTAL**
1	Introduction & general functions of respiratory system 4	2	1	3
2	Mechanics of pulmonary ventilation	2	1	3
3	Pulmonary volumes & capacities	2	1	3
4	Gas exchange Gas transport	2	1	3

	Regulation of respiration			
5	Hypoxia & cyanosis Aviation, space, and deep-see diving physiology	2	1	3
		10	5	15

	HISTOLOGY			
	Topic	***Lec.***	Practical	**TOTAL**
	Nose, nasal sinuses & nasopharynx. Larynx.	2	1	3
	Trachea, bronchial tree, alveoli & alveolar septae & pleura.	2	1	3

	Pathology			
	Topic	***Lec.***	Pract	**TOTAL**
	I- **Upper Respiratory Tract:** • Acute infections. • Nasal tumors. • Nasopharyngeal carcinoma. • Tumors of the larynx. 4 2	4	2	6
	II- Lower Respiratory Tract: • Lung collapse. • Obstructive lung diseases: Asthma, emphysema, chronic bronchitis & bronchiectasis. • Interstitial lung diseases. • Pulmonary infections: Pneumonias, lung abscess & tuberculosis. • Vascular lung diseases & embolism. • Pulmonary neoplasm: Bronchogenic carcinoma, carcinoid & mesothelioma	2	2	4
	Total	6	4	10

	MICROBIOLOGY			
	Topic	***Lec.***	Practical	**TOTAL**
	I. Upper respiratory tract: Microorganisms causing common cold (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention) Allergic rhinitis (Atopy, hay fever)	2	1	3
	Microorganisms causing Pharyngitis & Tonsillitis. (Defin., causes, pathogenesis, lab. Diagnosis, treatment and prevention)	2	2	
	Microorganisms causing Otitis media & sinusitis (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention)	2	2	
	Microorganisms causing Otitis media & sinusitis (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention)	2	2	
	Microorganisms causing Laryngitis & acute epiglottitis (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention)	2	2	4
	Microorganisms causing Diphtheria (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention)	2		2
	II. Lower respiratory tract: Microorganisms causing Pneumonia (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention)	2	2	4
	Microorganisms causing Bronchitis & whooping cough. (Definition, causes, pathogenesis, lab. diagnosis, treatment and prevention)	2	2	4
	Tuberculosis (Definition, causes, pathogenesis, lab. diagnosis, treatment and prevention)	2	2	4

	Fungal lung infections. (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention) Influenza. (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention) SARS. (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention)	2	2	4
	Influenza. (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention)	2		2
	SARS. (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention)	2		2
TOTAL		20	12	32

	Pharmacology			
	Topic	***Lec.***	Practical	**TOTAL**
	Cough therapy.	1		1
	Drugs used in bronchial asthma. Respiratory stimulants and inhibitors drugs (Analeptic agents).	1		1
	Antituberculous drugs	2		2
TOTAL		4		4

3. Course contents:

A. Theory:	**Anatomy**	
No	**Lecture title**	**Lecture Objectives**
1	**1. Introduction to Respiratory System**	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
	2. Thoracic cage, wall & respiratory muscles including the diaphragm.	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.
2	**Upper respiratory Tract-1&II**	1. Describe the structure of nasal cavity including nasal septum. 2. Describe the structure of lateral wall of nasal cavity including chonchae 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.
4	**Lower respiratory tract** Pleura, Lung and Mediastinum.	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.
6	Nasal cavity and pranasal sinuses	1. Describe the development of nasal cavity. 2. Describe development of the larynx.
	Lungs and diaphragm	1. Describe the development of lungs and bronchi. 2. Describe the development of the diaphragm.

A. Theory:	Physiology	
No	Lecture title	Lecture Objectives
	Pulmonary ventilation (Physiology)	1. Describe the mechanics of pulmonary ventilation. 2. Define pleural pressure, alveolar pressure and transpulmonary pressure 3. 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
	Pulmonary volumes and capacities	1. Define spirometry 2. Describe the significance of the major volume and

	(Physiology)	capacities that are recorded during normal function test. 3. Understand algebraic interrelations among pulmonary values and capacities 4. Describe the techniques used to determine functional residual capacity, residual volume and the total lung capacity 5. Describe the closing volume 6. Define minute respiratory volume
	Histology of Respiratory Trac	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.
	Alveolar ventilation **(Physiology)**	1. Define alveolar ventilation 2. List the factors that determine alveolar ventilation 3. Understand differences between anatomic and physiologic dead spaces 4. Describe the effect of dead space on alveolar ventilation 5. Define rate of alveolar ventilation 6. Describe the effects of alveolar ventilation on PCOR2R and POR2
	Pulmonary circulation (Physiology)	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

A. Theory:	Microbiology	
No	Lecture title	Lecture Objectives
	Upper respiratory tract infections (1: Group A □-hemolytic streptococci & Haemophillus influenza (Microbiology)	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.
	Upper respiratory Tract. II Bordetella pertussis & Corynbacteriym diphtheria (Microbiology)	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
	Upper respiratory tract infections.III: Influenza virus, RSV (Microbiology)	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
	Lower respiratory tract infections 1: Streptococcus pneumonia and other Spp. **(Microbiology)**	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.
	Lower respiratory tract infections.II: Pseudomonas, Moraxella and Bacillus Anthracis **(Microbiology)**	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. 5. Be familiar with related laboratory diagnosis.

		Be familiar with their treatment and prevention
	Lower respiratory tract infections: III Mycoplasma and Legionella (Microbiology)	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.
	Fungal infections **(Microbiology)**	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.
	Mycobacterium tuberculosis **(Microbiology)**	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 antimicrobic 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

A. Theory:	Pathology	
No	Lecture title	Lecture Objectives
	Upper respiratory tract infection	
	Chronic Pulmonary infections and Tuberculosis	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 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
	Lung Tumors 1&2 **(Pathology)**	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

A. Theory:	**Pharmacology**	
No	Lecture title	Lecture Objectives
	Anti tuberculosis Drugs used in asthma	

4- Teaching and learning methods:

METHODS USED:

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

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

6-D) Examination description:

Examination	Description
Final exam: u- Written v- Practical	MCQs cases complete cross matching

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

Cardiovascular system

Duration (Weeks): + 1 (Exam)
Credit hours: 7

I. General information about the course

1	**Course Title**	**Cardiovascular System**
2	**Course Code**	
3	**Credit hours**	**6 h (4h theoretical + 2h practical)**
4	**Academic Year**	**Second Year- First semester**
5	**Program**	**Laboratory Medicine**
6	**Department**	
7	**Study System**	Integrated System Block with PBL
8	**Teaching Language**	**English**
9	**Pre-requisites**	**Anatomy, physiology, histology**
10	**Co-requisites**	**None**
11	**Allocated Marks**	**300**
12	**Course duration**	**weeks**
	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.

3- Course contents

	Anatomy			
	Topic	**Lecture**	**Practical**	**Total**
	Development & congenital anomalies of heart.	**1**		
	Pericardium.	**1**		
	Heart.	**1**		
	Great vessels.	**1**		
	Surface, radiological and clinical anatomy.	**1**		

	Physiology			
	Topic	**Lecture**	**Practical**	**Total**
	Introduction to CVS	**1**		
	Cardiac muscle: Physiology and properties	**1**		
	Cardiac cycle	**1**		
	Normal ECG	**1**		
	Arterial blood pressure	**1**		
	Nervous & humoral regulation of ABP	**1**		
	Cardiac output, venous return & its regulation	**1**		
	Total			

	Histology			
	Topic	**Lecture**	**Practical**	**Total**
	Heart	**1**		**1**
	Blood vessels			
Total		**1**		**1**

Biochemistry				
	Topic	**Lecture**	**Practical**	**Total**
	Metabolism in the cardiac muscle under physiological and pathological conition	**1**	**1**	**2**
	Plasma lipoproteins and cholesterol I **Plasma lipoproteins and cholesterol II**	**1** **1**	**1**	**2**
	Cardiac enzymes and other proteins markers	**2**	**1**	**3**
	Total	**3**	**3**	**7**

	Pharmacology			
	Topic	**Lecture**	**Practical**	**Total**
	Action and mechanism of : antiarrhythmic	**1**	**1**	**2**
	Antihypertensive drugs I			
	Antihypertensive drugs II	**1**		
	Hyperlipediamias	**1**		
	Antianginal drugs			
	Drugs used in the treatment of heart failure			
	Total	**3**	**1**	**4**

	Pathology			
	Topic	**Lecture**	**Practical**	**Total**
	I- Pathology of blood vessels: • Atherosclerosis. • Hypertension. • Aneurysms. • Vasculitis. • Venous & lymphatic disorders. • Vascular tumors.	**1**	**1**	**2**
	II- Pathology of the heart: • Ischemic heart diseases. • Rheumatic heart diseases. • Infective endocarditis. • Myocardial diseases.	**1**		**1**

	• Valvular & pericardial heart diseases.			
	Total	**2**	**1**	**3**

	Microbiology			
	Topic	**Lecture**	**Practical**	**Total**
	Bacterial endocarditis. (Definition, causes, pathogenesis, lab. Diagnosis, treatment and prevention)	**1**	**1**	**2**
	Bactermia, Septicemia and Septic shock	**1**	**1**	**2**
	Total	**2**	**2**	**4**

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.

- 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.
TEACHING PLAN:

- Lectures: 29 lectures
- Small classes: 29 practical classes

Time plan:

Item	**Time schedule**	Teaching / hours
Lectures		
Practical classes		
Total		

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		Date
1ST	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
Final exam:	
a-Written	100
b- Practical	50

Total	150

5-D) Examination description:

Examination	Description
Finalexam: a-Written MCQ b- Practical	• select(MCQs),Short essay, cases, complete, cross matching • spot identification

6-List of references:

6.1- Department books:

6.2- Essential books(textbook):

6.3-Recommended books:

G. 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 Illustarted 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. .

6.4- Periodicals, Web sites ,etc:

-

7- Facilities required for teaching and learning:

Facilities used for teaching this course include:

-Faculty lectures halls:

-Department lectures halls:

- Audio-visual teaching equipment (Computer, data show,)
- Models and mannequins
- Data show, scientific pictures archives.

-Radiology collections &archive

Course coordinator: Prof.Dr./

Head of Department :Prof.Dr./

.Hematopoietic and Lymphoid System

Haemopoietic &Lymphatic System

I. General information about the course

1	**Course Title**	.Hematopoietic & Lymphoid System
2	**Course Code**	MD 224
3	**Credit hours**	**6 h (4h theoretical + 2h practical)**
4	**Academic Year**	**Second Year- Second semester**
5	**Program**	**Laboratory Medicine**
6	**Department**	
7	**Study System**	Integrated System Block with PBL
8	**Teaching Language**	**English**
9	**Pre-requisites**	**Anatomy, physiology, histology**
10	**Co-requisites**	**None**
11	**Allocated Marks**	**300**
12	**Course duration**	**weeks**
13	**Teaching Approaches**	Integrated System Block with PBL

II-Course Description

Hematology is the study of blood and blood diseases. This module will include the study of the physiology of blood/hematologic system components in addition to the pathophysiology, diagnosis, prognosis and treatment of blood related diseases. Through lectures, cases and assignments, students will develop a clinical approach

to common hematologic problems including anemia, bleeding disorders, hereditary and acquired thrombotic disorders, lymphadenopathy, splenomegaly, hematologic malignancies and transfusion medicine.

B) Professional Information:

1- Overall Aim of the Course:

The aim of the hematology course is to prepare Doctor of medicine in Laboratory medicine as senior practitioners, educators, researchers, and administrators capable of practicing clinical hematology in academic and clinical settings.

1.1. Identification of the blood cells and clotting factors, its function in health and disease, pathogenesis and its clinical applications in diagnosis, follow up and treatment of diseases.

1.2. Knowledge about appropriate use of technology in the diagnosis of diseases and giving an access to new knowledge in the means of treatment

III. Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

After completing this course, students would be able to:

1. 1-Describe the composition of blood in relation to its biochemistry and physiology
2. 2- Define anemia and its pathophysiology.
3. 3- Classify different types of anemias on the basis of its pathophysiology.
4. 4-Recognize ABO/RH blood grouping system
5. 5-Practice history taking of a patient presented with blood disorders
6. 6-Explain hemostatsis and roll of thrombolysis
7. 6-Describe pathophysiology of bleeding disorders & identify its different types.
8. 7-Identify role of pharmacology in anemia and bleeding disorders
9. 8-Define and explain research methodology.
10. 9-Identify and describe immunology on the basis of its pathophysiology
11. 10-Enlist pharmaceutical agents used in different immunological disorders
12. 11-Understand the anatomy, physiology, biochemistry and molecular biology of the cellular and protein elements of blood and of the haematopoietic, lymphatic, vascular and reticuloendothelial systems;
13. 12-Understand the pathophysiology of haematological and related disorders.

B- Intellectual skills

1. b1. Correlate haematology alterations with clinical data to reach etiology, diagnosis and treatment.
2. b2. Interpret symptoms, signs and haematology laboratory findings of some genetic disorders.

3. b3. Analyze and evaluate laboratory results and use them in diagnosis of diseases.
4. b4. Assess the clinical significance of determination of blood levels of hemoglobuline and blood index test.
5. b5-Integrate facts about function of different organs subserving the homeostasis.

C- Professional and practical skills

1. c1. Able to perform lab tests in haematology lab.
2. c2-Work effectively in groups in hematology laboratories.
3. c3-perform and interpret some basic bedside laboratory test(Blood picture,blood grouping ,bleeding time, clotting time,…)

D- General and Transferable Skills

1. d1. Respect academic/medical staff and colleagues
2. d2. Work effectively both in a team and independently.
3. d3. Communicate ideas and arguments effectively.
4. d4. Present the medical information in written, oral or electronic forms.
5. d5. Use the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

3- Course contents

	Anatomy			
	Topic	**Lecture**	**Practical**	**Total**
	-Embryological development of blood elements. -Hematogenesis -Blood components - Blood cellular - Organ of Hematopoiesis	**1**	**1**	**2**
	Total	**1**		**2**

	Physiology			
	Topic	**Lecture**	**Practical**	**Total**
	-Introduction & general functions -Red blood cells: production, formation of Hb & destruction. -Blood groups, Rh factor & cross matching. -Haemostasis & blood coagulation -Function of WBC (Leukocytes, granulocytes, the monocyte - macrophage system (functions))	**3**	**2**	**4**
	Total	**3**	**2**	**5**

	Histology			
	Topic	**Lecture**	**Practical**	**Total**
	WBC,RBC,PLT	**1**	**1**	**2**
	Total			

	Biochemistry			
	Topic	**Lecture**	**Practical**	**Total**
	Metabolism of vitamin B12 and folic acid	**1**	**1**	**2**
	Heme and porphyrin metabolism	**1**	**1**	**2**
	Globin genes and Molecular biology of globin synthesis & role of iron and heme .	**1**	**1**	**2**
	Hemoglobinopathies and hemoglobin electophoresis	**2**	**1**	**3**
	Biochemical basis of porphyria and jundice in hemolytic anemia	**2**	**1**	**3**
	Total	**7**	**5**	**12**

	Pharmacology			
	Topic	**Lecture**	**Practical**	**Total**
	Anticoagulants & fibrinolytics	**1**		**1**
	Treatment of Nutritional Anemia (Iron & vitamins therapy)	**1**		**1**
	Antimalarial agents	**1**		**1**
	Anticancer drugs	**1**		**1**
	Treatment of Leishmaniasis,	**1**		**1**
	Treatment of Filariasis	**1**		**1**
	Treatment of Toxoplasmosis & Trypanosomiasis	**1**		**1**
	Total	**7**		**7**

	Pathology			
	Topic	**Lecture**	**Practical**	**Total**
	Cellular elements of blood & bone marrow.	**1**		
	Stem Cell Disorders: • Classification • Aplastic anemia. • Myeloproliferative disorders. • Polycythemia.	**2**		
	Leukemias: • Acute leukemias • Chronic leukemias.	**2**		
	Anemia: **1-Classification.**	**3**		

	2-Nutritional anemia: Iron deficiency & megaloblastic anemia. **3-Hemolytic anemia**: Hereditary hemoglobinopathies (sickle cell anemia) & thalassemias, hereditary spherocytosis, G6PD deficiency & immune hemolytic anemia.			
	Bleeding Disorders: **1-**Classification. **2-**Investigations	**2**		
	Disorders of lymphoid tissues: **1-**Reactive conditions. **2-**Non-Hodgkin's Lymphomas. **3-**Hodgkin's Disease **3-**Multiple myeloma	**2**		
	Total			

	Microbiology			
	Topic	Lecture	Practical	Total
	Bacteria Epidemic and endemic typhus, Yersinia pestis, plague , Q Fever, and other ricketsia	**1**	**1**	**2**
	Parasite Trypanosomiasis, visceral , leishmaniasis and Filariasis 1-Microbiological properties. 2. Classification and diseases. 3. Microscopic differences between species. 4. Life cycle epidemiology and specimen collection. 5. Pathophysiology and clinical presentation. 6. Diagnosis, treatment, and prevention	**1**	**1**	**2**
	Malaria	**1**	**1**	**2**
	Virology Epstein Barr Virus (EBV) and Parvovirus B 19	**1**	**1**	**2**
	Blood culture techniques	**1**	**1**	**2**
	Total	**5**	**5**	**10**

Practical

	Topic	Practical	

1	**Histology of blood smear and Histology of lymphoid tissue (Anatomy)**	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. Eat the same process above in identifying and examining cross sections of the spleen, thymus, tonsils and Mucosa Associated Lymphoid Tissues (MALT).	**1**
	Histology of lymphoid tissue (Anatomy)	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).	**2**
	RBCs & WBCs count (Physiology)	1. Introduce the student to the hematology lab. 2. Learn the basic techniques used in counting & the clinical implication of this count.	**3**
	Hb, PCV, RBCs, WBCs, & differential (Physiology)	1. Learn the basic techniques in doing Hb, PCV, & RBCs 2. Understand how to calculate RBCs 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.	**4**
	Anemias and leulemias (Pathology)	Identify the morphologic abnormalities of peripheral blood and bone marrow in: 1. Iron deficiency anemia 2. Megaloblastic anemia 3. Thalassemias 4. Sickle cell anemia 5. Micoangiopathic hemolytic anemia 6. G6PD hemolytic anemia 7. Autoimmune hemolytic anemia 8. Hereditary spherocytosis 9. Identify: 10. Lymphoblasts 11. Myeloblasts 12. Promyelocytes 13. Prolymphocytes 14. Auer rods Identify the diagnostic microscopic changes of: 1. Acute myeloid leukemia	

		2. Acute lymphoblastic leukemia 3. Chronic myelogenous leukemia 4. Chronic lymphocytic leukemia 5. Hairy cell leukemia	
	Lymph node enlargement and lymphomas (Pathology)	Identify the microscopic morphologic changes of: 1. Follicular hyperplasia 2. Follicular lymphomas 3. Mantle cell lymphoma 4. Small lymphocytic lymphoma 5. Large cell lymphoma 6. Hodgkin disease and its subtypes	

S	Topic	Ac. Hrs		
		Th	Pr	
1	Introduction to Hematology: 1.1 Definition of Terms 1.2 Characteristics of Blood 1.3 Function of Blood 1.4 Composition of Blood	2	1	After completing this chapter, the student will be able to: **1.** Define the components of Blood. **2.** Describe the characteristics of Blood. **3.** Discuss the Function of Blood **5.** Differentiate between Blood Components
2	Hematopoiesis: 2.1 The Origin of Cell 2.2 Development 2.3 2.2 Role of Spleen 2.4 1.3 Role of Bone Marrow and Myeloid: Erythroid Ratio 2.5 1.4 The Role of Stem Cells and Cytokines.	4		After completing this chapter, the student will be able to: **1.** Define the components of hematopoiesis. **2.** Describe the organs used for hematopoiesis throughout fetal and adult life. **3.** Define the microenvironment and the factors affecting differentiation of the pluripotent stem cell (PSC). **4.** Discuss the four functions of the spleen. **5.** Differentiate between intramedullary and extramedullary hematopoiesis. **6.** Define the myeloid:erythroid ratio.
3	Erythropoiesis:	2	1	After completing this chapter, the student

	3.1 Erythropoietin 3.2 Red Cells Production and Maturation Stages 3.3 Red Cells Structure and Function 3.4 Features of Red Cells Identification Hemoglobin: - Structure and Synthesis - Types of Hb - Function of Hb	2	1	will be able to:
4	Leukopoiesis: 4.1 White Cells Production and Maturation Stages 4.2 White Cells Structure and Function 4.3 Features of WC identification	2	1	
5	Megakaryopoiesis: 5.1 Platelet Production and Maturation Stages 5.2 Platelet Structure and Function 5.3 Features of Platelet identification	2	1	
6	Hemostasis: 6.1 Overview of hemostasis 6.2 Primary Hemostasis 6.3 Secondary Hemostasis	2	1	
7	Erythrocyte Disorders: 7.1 Introduction 7.2 Quantitative and Qualitative Red Cells Disorders 7.3 Acquired Red Cells Disorders: 7.3.1 Iron Deficiency Anemia 7.3.2 Macrocytic Anemia 7.4 Hereditary Red Cells Disorders and Hemoglobinopathies 7.4.1 Sickle Cell 7.4.2 Thalassemia 7.4.3 G6PD	12	6	
8	Bleeding Disorders: (Thrombosis and Anticoagulation) 8.1 Introduction 8.2 Classification of Bleeding Disorders: 8.3 Congenital: 8.3.1 Hemophilia A 8.3.2 Hemophilia B 8.4 Acquired:	8	4	

	8.4.1 Vit K deficiency 8.5 DIC 8.6 Anticoagulation			
9	Platelet Disorders: 9.1 Introduction 9.2 Quantitative and Qualitative Platelet Disorders 7.5 Acquired Platelet Disorders 7.6 Congenital Platelet Disorders	6	3	
10	Leukocyte Disorders: 10.1Introduction 10.2Quantitative and Qualitative Changes in White Cells 10.3Hereditary White Cells Disorders 10.4Acquired White Cells Disorders: 10.4.1 Acute Myeloid Leukemia 10.4.2 Acute Lymphoid Leukemia 10.4.3 Chronic Myeloid Leukemia 10.4.4 Chronic Lymphoid Leukemia	12	6	
11	Lymphoma:	2	1	
12	Multiple Myeloma:	2	1	
13	Diagnostic Hematology		14	

4-Teaching and learning methods
METHODS USED:

1.	Lacture
2.	Lab. classes
3.	Group discussion
4.	Problem base
5.	Presentation
6.	Reports
7.	Assignment

V- Teaching methods

1-	Lectures
2-	Lab classes
3-	Group discussion
4-	Problem solving
5-	Presentation
6-	Reports
7-	assignment

TEACHING PLAN:

- Lectures: 29 lectures
- Small classes: 29 practical classes

Time plan:

Item	**Time schedule**	Teaching / hours
Lectures		
Practical classes		
Total		

V. Tasks and Assignments

No.	Assessment task	Week due	Proportion of final assessment
1	Quiz 1	Week 4	8%
2	Mid exam	Week 8	20
3	Quiz 2	Week 12	8%
4	Attendance	All weeks	4%
5	Assignments	During the block	10%
6	Practical exam	According to the group	50%
7	Final Exam	End of the block	50%

3- Teaching and learning methods:
METHODS USED:

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

4- Student Assessment methods:

5-D) Examination description:

	Examination	Description
	Final exam:	(MCQs) Short essay cases complete cross matching
	Practical	

VI. Learning Resources

Essential books

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 Illustarted 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.

Cellular and Molecular Immunology

I. General information about the course

1	**Course Title**	**Cellular and** Molecular Immunology
2	**Course Code**	
3	**Credit hours**	**h 3(2h theoretical + 1h practical)**
4	**Academic Year**	**Third Year- Second semester**
5	**Program**	**Laboratory Medicine**
6	**Department**	
7	**Study System**	**Integrated system**
8	**Teaching Language**	**English**
9	**Pre-requisites**	**General immunology ,Hematopeotic**
10	**Co-requisites**	
11	**Allocated Marks**	**300**
12	**Course duration**	**15 weeks**

B- Professional Information

1 - Overall aims of course:

This course is designed to provide the students with basic knowledge on immunoglobulins and TCR: structure, function, biological functions and genetics, Ag recognition, specificity, affinity and avidity, structure of receptors for Ag on B and T cells and immunoglobulin isotypes, allotypes and idyotypes.

2 - Intended learning outcomes of course (ILOs)

Knowledge and Understanding:

Define types of T cells, their response to antigens and relationship to B cells

a2- Recall how the immunologic cells interact in defending the body against invading microorganisms in primary and secondary immune responses

a3- Understand the specific and non specific effector mechanisms.

a1- Recognize the basic structure of immuonoglobulin molecule.
a2- Describe the complement system.
a3- Explain the organization and expression of immunoglobulin genes.
a4- Classify adhesion molecule families, and identify their role in the immune response.
a5- Recall cytokines and chemokines and describe their mode of action.

a6- Recognize research techniques and data handling, storage and manipulation and laboratory safety.

Intellectual Skills:

b1- Compare the functions of T and B cells

b2- Demonstrate primary and secondary immune response to defend the body against microorganisms.

b3- Illustrate specific and non specific effector mechanisms.

b1- Relate immuonoglobulin structure with its function.
b2- Illustrate the origin of antibody diversity
b3- Interpret the role of adhesion molecules in immune response.
b4- Solve problems in the field of molecular immunology.
b5- Analyze different research methods.
b6- Interpret and analyze data derived from laboratory work.

Professional and Practical Skills:

c1- Gain experience in using immunological laboratory techniques to differentiate T and B cells..
c2- Acquire skills to perform with techniques to nonspecific and specific response

c1- Gain skills to use procedures safely and apply personal protective equipment in the laboratory.

c2- Aqcuire skills to outline the procedure for labeling, handling and disposing of potentially infectious material.
c3- Perform the laboratory techniques independently and as part of team.

General and Transferable Skills

d1- Develop skills in reading and research.
d2- Use information technology in learning.

d3- Develop team work with skills.
d4- Communicate through group discussion and oral presentations.
d5- Communicate effectively and through group discussion.

Attitude:

e1- Acquire creative thinking attitude.
e2- Develop skills of observation and instrumentation.
e3- Develop skills of planning and communication.
e4- Interaction in small group.

1-course content

Topic	No. of lecture per week		Hours for Lectures	Hours for tutorial and other small group or project	Hours for practical
Lymphatic system and homing	1		2		
-Cells of the Immune system: Monocytes/Macrophages (Agranulocytes)	1		2		
-Granulocytic Cells -Mast cells -Natural killer Cells (NK) -Dendritic Cells	1		2		
Age Processing and Presentation	1		2		
-T-Cell Receptor -T lymphocytes: T cell maturation and differentiation -T-cell activation	1		2		
-T helper cells	1		2		
-Cytotoxic T cells, T reg (Regulatory T cells)	1		2		
-B lymphocytes,	1		2		
-Interaction between T cells & other	1		2		

immune reactive cells					
Molecular					
-Basic structure of immunoglobulin, classes, subclasses, types ,subtypes and receptors. -General functions of Ab.	1		2		
-Generation of antibody diversity and Class switching	1		2		
-Monoclonal antibodies	1		2		
-Uses of Monoclonal antibodies	1		2		
-Nature of interaction between Ab-combining site and its epitope	1		2		
-Complement system	1		2		
-Cytokines and chemokines	1		2		
-Adhesion molecules	1		2		
-Signal Transducng molecules	1		2		
Total	16		32		

4- Teaching and learning methods

4.1. Lectures
4.2. Practical lessons
4.3. Essays
4.4. Small group discussion

5- Student assessment methods

5.1. Written exam to assess ILOs a & b
5.2. Oral exam to assess ILOs b & d
5.3 Practical exam to assess ILOc c

- Assessment schedule

Assessment 1…. Exam 1 written ……..Week 6
Assessment 2 ….. Exam 2 written……..week 12
Assessment 3…….Practical exam……. Week 14
Assessment 4……Written final exam……Week 15
Assessment 5…….Oral exam……Weak 15

- Weighting of assessments

Midterm exams 30 %

Final written examination	30 %
Oral examination	15 %
Practical examination	15 %
Semester work	10 %
Total	100 %

6- List of references

6.1- Course notes

Notes on lectures and practical work .

6.2- Essential text book

Most current edition of Kuby Immunology

R. Coico, G. Sunshine, and Goldsby, Kindt, Osborne, Kuby. Immunology (6^{th} and 7^{th} Ed.). W.H. Freeman, New York, 2005 and 2007.

6.3- Recommended books

Most current edition of:

Essential Immunology (Evan Roitte´s)

6.4-Immunobiology : the immune system in health and disease / Charles A. Janeway, Jr. ... [et al.].--5th ed.

6.5- Web sites

www.Pubmed.com

7- Other Resources / Facilities required for teaching and learning to achieve the above ILOs

Data show

Laboratory equipments

Overhead projector

- We certify that all of the information required to deliver this course is contained in the above specification and will be implemented

Course coordinator:

Name:

Signature:…….....Date

……..

Head of Department of: Immunology

Name: Prof

Signature:……Date ……..

Year 3

First Semester

Gastrointestinal tract

Duration (Weeks): 9 + 1 (Exam)
Credit hours: 10

I. General information about the course

1	**Course Title**	Gastrointestinal tract
2	**Course Code**	
3	**Credit hours**	**6 h (4 h theoretical + 2 h practical)**
4	**Academic Year**	**Third Year- first semester**
5	**Program**	**Laboratory Medicine**
6	**Department**	
7	**Study System**	**Integrated system**
8	**Teaching Language**	**English**
9	**Pre-requisites**	**Anatomy, physiology, histology**
10	**Co-requisites**	
11	**Allocated Marks**	**300**
12	**Course duration**	**15 weeks**

II. Course Description

This course is to provide the students to understand and discuss the structure, function, the main problems, and diseases of the digestive system.

B) Professional Information:

1- Overall Aim of the Course is to :

1.a. **Enable** the student to know the functions of the digestive systems and its underlying mechanisms of actions.

1.b.**Enable** the student to correlate between the basic physiological functions of these body and its applications clinically.

2- Intended Learning Outcomes (ILOs):

2.a. Knowledge and understanding:

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

2.a.1. **Identify** the physiological anatomy of the digestive system.

2.a.2. **Describe** the structure of digestive system, motility of the GIT, secretory functions of the GIT, digistive and absorbtive functions of the GIT
2.a.3. **List** the digestive hormones and its actions,
2.a.4. **Define** electrical activity of gastrointestinal smooth muscle.
2.a.7. **Explain** different causes of oedema and causes of jaundice.
8-Recognize the updates in viral, bacterial and parasitic diseases of gastrointestinal system.
a-2) Discuss on evidence bases the laboratory diagnostic tests for infectious diseases of gastrointestinal system.

b-Intellectual skill

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

1) Compare and contrast between the abdominal and thoracic walls in terms of structure and function.
2) Explain the mechanisms of the inguinal canal and how its disturbance results in hernia formation.
3) Illustrate the applied anatomy of the peritoneum and its recesses.
4) Give a simplified explanation of the process of mastication.
5) Use their knowledge of the anatomy of the salivary glands to describe common lesions affecting the major salivary glands and their implications.
6) Detail the applied anatomy of pharyngeal anatomy such as adenoids, tonsillitis, foreign body impaction, etc.
7) Demonstrate the relation of the anatomical features of the oesophagus in relation to common diseases such as GERD and stricutures.
8) Explain the mechanism and implications of common disturbances affecting the 1. Stomach e.g. ulcers, obstruction, volvulus, etc 2. Small and large bowel e.g. obstruction, ischemia, appendicitis, etc. 3. Rectum and anal canal e.g. fissure, hemorrhoids, fistula, etc. 9) Illustrate the principles of the surgical approach to lesions such as abscesses in the Ischioanal fossa.

c-Profissional and practical skills

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

1) Act as efficient team members.
2) Perform self directed learning.
3) Participate in class discussion.
4) Present a talk to their colleagues in the student seminars.
5) Behave ethically conduct in the lecture and practical classes with the staff, colleagues and environment like instruments, benches, and laboratory material.

d-Transferable skill

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

1) Utilize efficiently the different knowledge resources including the library and websites.

2) Use computers, projectors and build up power point presentation.

3) Manipulate the laboratory results mathematically and statistically.

2.c. Communication skills: *By the end of the course the graduate will be able to:*

2.c.1. Communicate clearly and effectively with colleagues.

2.c.2. Establish trial for a good presentation in front of his colleagues during scientific discussions.

2.c.3. Communicate effectively with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.

3-Contant

	Anatomy			
	Topic	**Lecture**	**Practical**	**Total**
	Spleen.	**1**		
	Stomach			
	Pancreas.			
	Duodenum.			
	Small intestine and its mesentery			
	Large intestine			
	Caecum and appendix			
	A T D colon.	**1**		
	Pelvic colon.			
	Rectum.			
	Anal canal and Perineum	**1**		
	Liver, portal circulation & bile circulation	**1**		
	Biliary tract and gallbladder	**1**		
	Portal vein			
	Peritoneum.	**1**		
	Posterior abdominal wall and lumbar plexus	**1**		
	Blood supply of the GIT	**1**		
	Aorta and its branches.	**1**		
	Inferior vena cava and its tributaries.			
	Autonomic supply and segmental innervations			
	Lymph drainage			
	Surface, radiological and clinical anatomy			
	Anterior abdominal wall.			
	Inguinal canal and rectus sheath.			
	Hernia.	**1**		
	Embryology of GIT	**1**		
	Total	**11**		

	Physiology			
	Topic	**Lecture**	**Practical**	**Total**

	Principles of gastrointestinal function, motility, nervous, and hormonal control & blood circulation	**1**		
	Mastication and swallowing			
	Salivary secretion.			
	Stomach, functions, regulation of emptying, control of secretions, motility, and vomiting	**1**		
	Defecation	**1**		
	Total	**3**		

	Histology			
	Topic	**Lecture**	**Practical**	**Total**
	Oral cavity, salivary glands & Oesophagus.	**1**		
	Stomach & Small intestine			
	Appendix, Colon & Anal canal			
	Total	**1**		

	Biochemistry			
	Topic	**Lecture**	**Practical**	**Total**

	Pharmacology			
	Topic	**Lecture**	**Practical**	**Total**

	Pathology			
	Topic	**Lecture**	**Practical**	**Total**
	Oral pathology: Inflammatory diseases. Leukoplakia & neoplastic conditions. Salivary gland lesions.	**1**		

	Oral manifestations of systemic diseases			
	Esophageal disorders: Congenital & common acquired conditions. Achalasia. Esophagitis. Esophageal carcinoma.	**1**		
	Gastric pathology: Gastritis (acute & chronic). Peptic ulcer diseases (Etiology & risk factors, morphological changes). Gastric tumors. Hypertrophic gastropathy.	**1**		
	Intestinal disorders: Congenital anomalies. Infectious enterocolitis (Types & Pathogenesis). Acute appendicitis. Inflammatory towel diseases (crohn's disease & ulcerative colitis): Definition, etiology , pathogenesis & pathological changes. Malabsorption syndrome: Definition and classification. (Celiac disease: Pathogenesis & morphological changes). Diverticular diseases. Vascular diseases. Intestinal neoplasms: Adenoma, familial polyposis coli, colonic adenocarcinoma, carcinoid tumor & lymphoma.	**1**		

	Microbiology			
	Topic	**Lecture**	**Practical**	**Total**
	Definition, pathogenesis & Laboratory diagnosis of:	**2**	**1**	**3**
	Bacterial Diarrhea: E. coli, Shigella, Campylobacter jejuni, Yersinia, entercolitica Vibrio cholera, CL. Difficile (Antibiotic associated Diarrhea).			
	Viral Diarrhea: Rota virus, Astroviruses, Calciviruses. Adenoviruses, Norwalk viruses. Echoviruses.	**1**	**1**	**2**
	Systemic Infection initiated in the gasterointestinal: - Enteric fever (Salmonella typhi and paratyphi) - Listeriosis	**1**	**1**	**2**
	Microorganisms causing food poisoning: Staph. Aureus, Closteridium botulinum, Bacillus cereus, Vibrio parahaemoylyticus**,** Brucellosis**.**	**1**	**1**	**1**
	Gastric ulcer disease: Helicobacter pylori	**1**	**1**	**2**
	Parasite infection: Giardia lambelia	**3**	**3**	**6**
	Heterophyes Heterophyes			
	Ascaris lumbercoides, Trichuris trichura Pin worms			

	Taenia saginata, T. Solium Hymenolepis nana			
	Hook worms & Strongyloides stercoralis			
	Scistosomiasis: S. Mansoni			
	Total	**8**	**8**	**16**

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.
- 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.

TEACHING PLAN:

- Lectures: 29 lectures
- Small classes: 29 practical classes

Time plan:

Item	**Time schedule**	Teaching / hours
Lectures		
Practical classes		
Total		

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		Date
1ST	To be announced	Week
Practical	According to the group	Week
Final- Theory	To be decided by Registry office	

5-C) Weighting System:

Examination	Marks allocated
Final exam:	
a-Written	
b- Practical	
Total	300

5-D) Examination description:

Examination	**Description**
Finalexam: a-Written	• select(MCQs),Short essay, cases, complete, cross matching • spot identification

MCQ b- Practical	

6-List of references:

6.1- Department books:

6.2- Essential books(textbook):

6.3-Recommended books:

G. 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 Illustarted 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. .

6.4- Periodicals, Web sites ,etc:

-

7- Facilities required for teaching and learning:

Facilities used for teaching this course include:

-Faculty lectures halls:

-Department lectures halls:

- Audio-visual teaching equipment (Computer, data show,)
- Models and mannequins
- Data show, scientific pictures archives.

-Radiology collections &archive

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

Endocrine system

Endocrine System

Year 3
Block 1

Duration (W): 6 + 1 (Exam)
Credit hours: 8

Duration (weeks): 6+1 (Exam)
Credit hours: 8

Goals
1- To learn the normal structure, function, and organization of the major endocrine systems in the body.
2- To gain detailed knowledge of the regulation of hormonal secretion from the major glands of the body.
3- To become familiar with the etiology, pathophysiology, pathology, and diagnosis of the clinically important disorders of the major endocrine systems of the body.

Endocrine system

I. General information about the course

1	**Course Title**	**Endocrine system**
2	**Course Code**	
3	**Credit hours**	**6 h (5 h theoretical + 1 h practical)**
4	**Academic Year**	**Third Year- frist semester**
5	**Program**	**Laboratory Medicine**
6	**Department**	
7	**Study System**	**Integrated system**
8	**Teaching Language**	**English**
9	**Pre-requisites**	**Anatomy, physiology, histology**
10	**Co-requisites**	**None**
11	**Allocated Marks**	**300**
12	**Course duration**	**15 weeks**

A) Basic Information:
-Allocated marks: marks.
-Course duration: weeks of teaching.

-Teaching hours:
1- Theoretical hrs
2- Practical hrs

B) Professional Information:
1- Overall Aim of the Course is to:
1.a. **Enable** the student to know the functions of the different endocrine glands and its underlying mechanisms of secretion and action of hormones.
1.b.**Enable** the student to correlate between the disturbance of the basic physiological functions of the endocrine glands and its applications clinically.
3.b To provide the students with knowledge on the hormones produced by the body, the mechanisms of hormone action and the various control mechanisms for hormone production and functions.

2- Intended Learning Outcomes (ILOs):
2.a. Knowledge and understanding:
By the end of the course, students should be able to:
2.a.1.**Identify** the main endocrine glands.
2.a.2.**Describe** hormones and mechanism of its action.
2.a.3.**List** the hormones secreted by different glands .
2.a.4.**Enumerate** the manifestations and causes of disturbances of different hormones secretion such as hyperthyroidism, myxedema, ,dwarfism, gigantism, cushing, etc…….
2.a.5**. Mention** the role of hormones in blood glucose regulation, calcium homeostasis and hormones of the male and female
2.a.6.**Define** endocrine gland**,** hormones**,** calcium homeostasis etc…..
2.a.7.**Explain** the underlying causes of hormone disturbances.
b. Practical and Skills

By the end of the course, students should be able to:
b.1.**Observe** hypothyroid manifestation.
b.2.**Identfy** manifestations of tetany and how to diagnose it.
b.3.**Interpret** manifestation of growth hormone disorders.
b.4. **Comment on** pregnancy test.

c. Professional Attitude and Behavioral kills:
By the end of the course, students should be able to:
c.1. **Reflect** a good behavior when facing stressful condition example: oral exams and this is done by continuous discussion throughout the year in the practical lessons and also the written exams and this is done by continuous assessment throughout the year.
c.2. **Demonstrate** good relations with colleague:
Through dividing the students into small groups sharing the same experiment in practical lessons
Demonstrate respect and work effectively as a member or a leader of a team and reflect effective interpersonal relationship to communicate ideas and arguments.
c.4. **Demonstrate** respect to superiors and establish a good student- teacher relationship.
2.d. Communication skills: ***By the end of the course the graduate will be able to:***
d.1. **Communicate** clearly and effectively with colleagues.
d.2. **Establish** trial for a good presentation in front of his colleagues during scientific discussions.
d.3. **Communicate** effectively with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.
d.4. **Cope up** with difficult situations as oral exams and this is done by continuous assessment through practical lessons.
d.5. **Respect** all his colleagues and supervisors.

e. Intellectual Skills:
By the end of the course, students should be able to:
e.1**. analyze** different mechanisms for regulation of hormones.
e.2. **Solve** medical problems related to different glands.

f. General and transferable Skills:
By the end of the course, students should be able to:
f.1.**Use** the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.
.f.2.**Retrieve**, manage, and manipulate information by all means, including electronic means.
f.3.**Present** information clearly in written, electronic and oral forms.

3- Course contents:

	Anatomy			
	Topic	**Lecture**	**Practical**	**Total**
	Development of hypothalamus, pituitary, thyroid &	1		

	parathyroid, suprarenal, ,			
	2. Pituitary gland: Embryology, Gross anatomy, Blood supply, Nerve supply & Lymph drainage.			
	3. Thyroid & Parathyroid glands: Embryology, Gross anatomy, Blood supply, Nerve supply & Lymph drainage.			
	4. Suprarenal gland: Embryology, Gross anatomy, Blood supply, Nerve supply & Lymph drainage.			
	5. Pancreas: Embryology, Gross anatomy, Blood supply, Nerve supply & Lymph drainage.			
	6. Pineal gland (Embryology, Position & Pathway)			
	7. Thymus & Chromaffin System			
Total		7		

	Physiology			
	Topic	**Lecture**	**Practical**	**Total**
	1. Introduction to endocrinology			
	2. Chemical structure and synthesis of hormones, secretion, transport, and clearance.			
	3. Mechanisms of action of hormones, feedback control of hormone secretion.			
	4. The pituitary hormones and their control by the hypothalamus.			
	5. The thyroid metabolic hormones.			
	6. The adrenocortical hormones.			
	7. Insulin, glucagons, and diabetes mellitus.			
	8. Parathyroid hormone, calcitonin, calcium and phosphate metabolism, vitamin D, bone, and teeth.			
Total		12		

	Biochemistry			
	Topic	**Lecture**	**Practical**	**Total**
	1.Classification of hormones and second messenger			
	2. Synthesis, Structure and metabolic effects of hypothalamus and pituitary hormone.			
	3. Synthesis, Structure and metabolic effects of thyroid and parathyroid hormone.			
	4. Synthesis, Structure and metabolic effects of adrenal medulla.			
	5. Synthesis, Structure and metabolic effects of Steroid hormone.			
	6. Synthesis, Structure and metabolic effects of pancreatic hormone.			

Total	.	11		

	Histology			
	Topic	**Lecture**	**Practical**	**Total**
	MICROSCOPIC STRUCTURE OF THYROID GLAND			
	MICROSCOPIC STRUCTURE OF PANCREAS			
	MICROSCOPIC STRUCTUREOF ADRENAL GLAND II			
	MICROSCOPIC STRUCTURE OF PARATHYROID GLAND			
	MICROSCOPY OF PITUITARY GLAND.			
TOTAL		5		

	Pathology			
	Topic	**Lecture**	**Practical**	**Total**
	1. Pituitary disorders: • Hyerpituitarism and Pituitary adenomas. • Hypopituitarism. • Supracellar lesions.			
	2. Pathology of the thyroid • Thyoiditis: Hashimoto's thyroiditis, • Dequervain's thyroiditis & others. • Graves' disease. • Multinodular goiter. • Thyroid tumors: Adenoma, Papillary carcinoma, follicular carcinoma, medullary carcinoma & anaplastic carcinoma.			
	3. Parathyroid disorders: • Parathyroid hyperplasia. • Parathyroid adenoma.			
	4. Disorders of endocrine pancreas: • Diabetes mellitus: Classification, etiology, pathogenesis, complications & morphology.			
	5. Disorders of adrenal glands: • Adrenal cortical hyperplasia. • Adrenal cortical neoplasia: adenoma & carcinoma. • Pheochromocytoma**.**			
	6. Hyperadrenalism and Hypoadrenalism			
	7. Adrenogenital Syndomes			
	8. Multiple endocrine neoplasia syndrome			
Total		4		

	Pharmacology			
	Topic	**Lecture**	**Practical**	**Total**
	1. Introduction to Pituitary gland: • Growth hormone • Prolactin • Vasopressin			
	2. Thyroid & Antithyroid drugs			
	3.Parathyroid & agents affecting bone mineral homeostasis			
	4.Adrenocorticoids & Adrenocortical antagonists			
	5.Pancreatic hormones & Antidiabetic drugs			
	Total	4		

4- Teaching and learning methods:

4- Teaching and learning methods:

METHODS USED:

- Modified Lectures: the scientific material is presented through:
  - PowerPoint presentations.
  - Animations.
- Practical classes : demonstration of the endocrine disorders cases by colored cards showing the manifestation of each disorders e.g myxedema, dwarfism, cushing …etc
- Problem solving
- Self learning

Method	**Evidence**	**ILOs**
Modified lectures	CDs of lectures	
Practical classes	Practical book	
Problem solving	Case scenarios	
Self-learning	• Self presentation • Researches • log book	

TEACHING PLAN for the course:

Lectures: 45 hours**.**

Practical classes: 30 hours **.**

Time plane:

Item	Time schedule	Teaching hours	Total hours
Lectures	2 times/week/15 week (each 2h and1h) (3 hours /week)	**45 hours**	**60%**
Practical classes	1 time/week/15 week (each 2 hours) (2 Hours/ week)	**30 hours**	**40%**
Total		**75 hours**	**100%**

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA: **according to faculty by laws.**

9. Lectures (at least 50% attendance .)
10. Practical (at least 75% attendance .)
11. Log book

5-B) Assessment TOOLS:

Tool	Evidence	Purpose (ILOs)
Written examination: • MCQs • Case study • Short essay • Complete • True or false with explanation	Attached module of examination	
Oral examination	Viva card system	
Practical examination	Practical Reports	

5-C) TIME SCHEDULE FOR EACH SEMESTER:

Exam	Week

1- Assessment 1	Week---------- 8
3- Assessment 2 (Final exam)	Week--------- 15

5-D) Weighting System:

Examination	**Marks allocated**	**% of Total Marks**
1- ***mid term exam***: e- MCQ **activities**	5 marks 2.5 marks	6.7% 3.3%
2- ***Final exam:*** r. Written s. Oral t. practical exam u. practical book v. log book w. sheet	**2-** ***Final exam:*** r. Written s. Oral t. practical exam u. practical book v. log book w. sheet 27.5 marks 5 marks 10 marks 5 marks 5 marks 15 marks	36.6% 6.7% 13.3% 6.7% 6.7% 20%
Total	**75**	100%

FORMATIVE ASSESSMENT:

- Student knows his marks after the Formative exams.

5-E) Examination description:

Examination	**Description**
1- Mid-term exam	Quiz (MCQs)
2- Final exam:	short essay – true or false- complete-

a- Written b- Practical c- Oral	matching diagnose several endocrine disorders from the characteristic features presented by a picture. 1 session by 2 staff members.
3- Assignments & other activities	practical book and student activities

6- List of references:

6.a- Basic materials:

Department books:

4- Medical physiology (endocrine and reproduction) by staff members of physiology department 2014-2015.

2- Practical book by staff members of physiology department 2014- 2015.

6.b- Essential books (text books):

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

b) Kim E Barrett and Scott Boitano; Review of Medical Physiology, twenty fourth edition : 2012.

6.c- 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: 3
- Department lectures halls: 1
- Department laboratories: 2

Course coordinator: dr.
Prof Dr.
Date /2017

Musculoskeletal System

Musculoskeletal System

Duration (W): 10 + 1 (Exam) Credit hours: 8 Year 3 Block 1

Duration (W): 6 + 1 (Exam)
Credit hours: 8

I. General information about the course

1	**Course Title**	**Musculoskeletal system**
2	**Course Code**	
3	**Credit hours**	**6 h (5 h theoretical + 1 h practical)**
4	**Academic Year**	**Third Year- frist semester**
5	**Program**	**Laboratory Medicine**
6	**Department**	
7	**Study System**	**Integrated system**
8	**Teaching Language**	**English**
9	**Pre-requisites**	**Anatomy, physiology, histology**
10	**Co-requisites**	**None**
11	**Allocated Marks**	**300**
12	**Course duration**	**15 weeks**

B) Professional Information:

1- Overall Aim of the Course:

1-To Provide a scientific knowledge of the normal structure of the human body at the level of organ and organ system ,with the study of the normal growth and development relevant to the anatomical topics.
2-To provide appropriate ethical and professional education necessary for dealing with cadavers.
3-To correlate anatomical facts with their clinical applications.

2- Intended Learning Outcomes (ILOs):

2.a. Knowledge and understanding:

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

2.a.1**. Define** the anatomical regions of the head and neck, upper limb and lower limb.
2.a.2. **Describe** the basic structures of head and neck, upper limb and lower limb (bones ,muscles ,nerves ,vessels and joints).
2.a.3**. List** the surface landmarks of the underlying bones ,muscles ,tendons ,nerves and vessels of head and neck, upper limb and lower limb. .
2.a.4. **Outline** the effects of injuries of nerves and vessels of head and neck upper limb and lower limb .
2.a.5. **Mention** the collateral circulations and vascular anastomosis in head and neck ,upper limb and lower limb.

2b. Practical and Clinical Skills

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

2.b.1**. Identify** the different internal structures of head and neck ,upper limb and lower limb in human cadavers .
2.b.2**. Identify** the bones and joints of head and neck ,upper limb and lower limb by X ray.
2.b.3. **Apply** the anatomical facts of head and neck, upper limb and lower limb while examining the living subject .
2.b.4**. Demonstrate** the surface markings of different nerves and vessels of head and neck, upper limb and lower limb
2.b.5**. Identify** the deformities of head and neck ,upper limb and lower limb in photographs **.**

2.c. Professional Attitude and Behavioral Skills:

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

2.c.1**. Demonestrate** respect for dealing with cadavers, and dealing with surrounding colleagues .
2.c.2**. Respect** dealing with the staff and involve them in any problems facing the students whether social or educational problems to apply the fact of one family .
2.c.3. ***Reflect*** *honesty and integrity in all interactions with teachers, colleagues, and others with whom we must interact in their professional lives*.
2.c.4. ***Value*** *the ethics and respect to all individuals inside and outside the dissecting room and pay a good deal of respect to the cadavers.*
2.c.5. ***Demonestrate*** *a professional image concerning behavior, dress and speech*

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 patients and their relatives, and colleagues from a variety of health and social care professions.
2.d.2. **Establish** good relations 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.e. Intellectual Skills:

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

2.e.1 **Interpret** some clinical deformities in head and neck ,upper limb and lower limb.

2.e.2 **Interpret** the normal anatomical structures on x ray

2.e.3 **Distinguish** between the distributions of each nerve of head and neck upper limb and lower limb .

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** *appropriate professional attitudes and behaviors in different practice situations.*

2.f.3. **Establish** life-long self-learning required for continuous professional development.

2.f.4. **Use** the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

2.f.5. **Retrieve**, manage, and manipulate information by all means,
Including electronic means.

2.f.6. **Present** information clearly in written, electronic and oral forms.

2.f.7. **Establish** effective interpersonal relationship to Communicate ideas and arguments.

3- Course contents:

	Anatomy			
	Topic	**Lecture**	**Practical**	**Total**
	I-Head & Neck Skull & cervical vertebrae (General identification)			
	Scalp & temple			
	Face			
	Posterior triangle			
	Anterior triangle			
	Suboccipital triangle			
	Infratemporal region			
	Suboccipital triangle			
	Infratemporal region			
	Midline structures of the neck			
	Cervical sympaathetic trunk			
	Parasympathetic supply of head & neck			
	Sphenoplatine fossa			

	Cervical fascia, carotid & jugular system			
	Cranial nerves			
	Lymph drainage of head & neck			
	II. Lower Limb			
	Bones of lower limb Superficial structures & Saphenous system			
	Femoral triangle			
	Femoral vessels & nerves			
	Anterior compartment of thig			
	Medial compartment of thigh			
	Adductor canal			
	Obturator vessels & nerves			
	Gluteal region			
	Posterior compartment of thigh			
	Posterior compartment of thigh			
	Popliteal fossa			
	Popliteal vessels & nerves			
	Anterior compartment of leg & extensor retinaculum			
	Lateral compartment of leg & peroneal retinacula			
	Posterior compartment of leg & flexor retinacula			
	Arches of foot & its congenital anomalies			
	Segmental & cutaneous innervation			
	Lymph drainage			
	Surface anatomy of arteries			
	Nerve injuries of lower limb			
	Joints & their injuries			
	Surface anatomy of arteries			
	TOTAL			

	Physiology			
	Topic	**Lecture**	**Practical**	**Total**
	Introduction to the nervous system			
	Neuron, structure & functions			
	Resting membrane potential of nerve			
	Nerve action potential			
	Propagation of action potential			
	Physiologic anatomy of skeletal muscle			
	General & molecular mechanisms of muscle contraction			
	Neuromuscular junction			
	Excitation contraction coupling			
	Contraction & excitation of smooth muscle			
	TOTAL			

	Biochemistry			
	Topic	**Lecture**	**Practical**	**Total**
	Chemical constituent of skeletal muscles			
	Molecular events in muscle contraction			
	Sources of energy			
	Synthesis of Heme & Myoglobin			

	Metabolism of calcium & phosphorus			
	Chemical constituent of skeletal muscles			
	TOTAL			

	Histology			
	Topic	**Lecture**	**Practical**	**Total**
	Skeletal muscles			
	Cartilage			
	Bone			
	Joints			
	Skin			
	Breast			
	TOTAL			

	Pathology			
	Topic	**Lecture**	**Practical**	**Total**
	Bone Pathology: Hereditary & metabolic disorders			
	Osteoporosis			
	Fractures			
	Osteomyelitis			
	Bone tumors			
	Joint Disorders: Osteoarthritis, Infectious arthritis, Rheumatoid arthritis			
	Soft tissues Tumours: Classification, Etiology, Pathogenesis			
	Diseases of Skeletal Muscles: Muscle atrophy, Muscle dystrophy, Myasthenia gravis			
	Pathology of the skin: Disorders of Melanocytes Premalignant & Malignant disorders of epidermis			
	Pathology of Breast: Developmental disorders			
	Inflammatory conditions: Acute mastitis, Fat necrosis & Duct ectasia			
	Fibrocystic changes			
	Proliferative breast disorders			
	Benign tumours of breast			
	Breast carcinoma			
	Disorders of male breast			
	TOTAL			

	MICROBIOLOGY			
	Topic	**Lecture**	**Practical**	**Total**
	Definition, cause, pathogenesis, lab. Diagnosis of:			

	Bacteria causing skin infections (Staphylococci, Streptococci *(impetigo, Cellulitis)* Closterdium perfringens *(gas gangrene).* Osteomyelitis Artheritis (Septic arthritis and rheumatoid arthritis**)**			
	Leprosy and other Mycobacterial skin disease Mycobacterium marinum, Mycobacterium ulcerans			
	Fungal infections of the skin: Superficial and cutaneous mycosis Malasia furfur (Pityriasis versicolor) Cutaneous dermatophytes of skin, hair and nails: Tinea (Ring warm), Tinea pedis, Tinea capitis, tinea imbricata, Tinea corporis, etc.			
	Mucocutaneous lesions caused by viruses: Papilloma virus infection Pox virus cuases Molluscum contagiosum Herpes simplex type 1 Coxsackie virus Human parvovirus (B19) Measles Rubella Varicella-Zoster virus			
	Actinomyces			
	Parasitic infections of muscle of the skin Leishmaniasis (Cutaneous & mucocutaneeous) Trypanosoma cruzi (Chaga's disease)			
	Parasitic infections of muscle: Trichinella spiralis infection Teania solium			
	TOTAL			

	Pharmacology			
	Topic	**Lecture**	**Practical**	**Total**
	Nonsteroidal anti-inflammatory drugs (NSAIDs)			
	Antigout agents			
	Skeletal muscle relaxants			
	Local anesthetics			
	TOTAL			

4- Teaching and learning methods:

METHODS USED:

- Modified Lectures.
- Practical classes
- Small group discussions
- Self-learning

Upper Limb

1-Pectoral region and breast , Axilla, Back ,Shoulder region

2-Superficial veins of U.L. ,cutaneous nerves , Compartments of arm, Anastomoses around elbow, Cubital fossa & compartments of forearm
3- Dorsum of hand , palm of hand
4-Joints of U.L. : shoulder joint, joints of shoulder girdle elbow joint, radio-ulnar joint ,wrist joint, joints of fingers

5-nerve injuries, collateral circulation in upper limb

Method	*Evidence*	*ILOs*
Modified Lectures	***CDs of* Lectures *including (video films, brain storming, problem solving, etc)***	

Practical classes
practical Jars, specimens

Small group discussions
Museum specimens, demonstration (x ray films and data show), models

Self learning
Students activity e.g.;
- Researches
- Self-presentation
- Student logbook

TEACHING PLAN:
Lectures: 30 lectures
Small group discussions: 15 group
Practical classes: 15 practical classes

Time plan:

Item	**Time schedule**	Teaching / hours
Lectures		
Practical classes		
Total		

Lectures
2 times/week/15 weeks
(1 hours each)
(2 hours /week)
30 hours
50%

Practical classes
2 times/week/15week
(1/2 hours/week)
15hours
25%
Small group discussion
2 times/week/ 15week
(1/2hours/week)
15 hours
25%
Total
60 hours

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA:

1. Lectures(at least 50% attendance).
2. Practical books(atleast 75% attendance)
3. Log book

5-B) Assessment Tools:

Exam		Date
1ST	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
Final exam:	
a-Written	

b- Practical	
Total	300

5-D) Examination description:

Examination	Description
Final exam: a-Written MCQ b- Practical	• select(MCQs),Short essay, cases, complete, cross matching • spot identification

6-List of references:

5-B) Assessment TOOLS:
Tool Evidence Purpose (ILOs)

Written examination
- Short essay
- Case study
- Complete
- Cross matching
- MCQS

Attached module of examination
Oral examination
Viva card system
Practical examination
Practical Reports

5-C) Weighting System:
Examination
Marks allocated
% of Total Marks
1- **P.C.T in upper limb)**

2- Assignments & other activities
3- Final exam:
a- Written
b- Practical
c- Oral
Total

FORMATIVE ASSESSMENT:
- Student knows his marks after the Formative exams.

5-D) Examination description:

Examination

Description

3- P.C.T in ANT 102

-Short essay , case study ,complete , cross matching ,MCQS, diagrams

3- Final exam:

a- Written

b- Practical

c- Oral

- Short essay , cases, complete, cross matching, MCQS
- Spot identification
- Two sessions

4- Assignments & other activities

- Assignments, projects, practical books

6- List of references:

6.1- Basic materials:

Department books:

1-Anatomy of Upper Limb (2013): Anatomy Department, Benha Faculty of Medicine

2.- ***Practical books(2013):*** (Log book- Museum book)Anatomy Department, Benha Faculty of Medicine

6.2- Essential books (text books):

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

6.3- Recommended books:

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

6.4- Periodicals, Web sites, etc:

- http://www.anatomy.com
- 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: 2
- Department lectures halls: 4
- Museum hall: 6TH floor
- dissecting room.
- Audio-visual teaching equipments (Computer,data show,)
- Models and mannequins
- Data show, scientific pictures archives.
- Radiology collections & archive

Course coordinator: Prof. Dr. /

Head of Department: Prof. Dr./
Date: 9/2013

Forensic Medicine and Toxicology

Forensic Medicine and Toxicology

Duration (weeks): 13 + 1 (Exam) Credit hours: 3

I. General information about the course

1	Course Title	Forensic Medicine and Toxicology
2	Course Code	
3	Credit hours	3 h (2 h theoretical + 1 h practical)
4	Academic Year	Third Year- First semester
5	Program	Laboratory Medicine
6	Department	
7	Study System	Integrated system
8	Teaching Language	English
9	Pre-requisites	Anatomy, physiology, histology
10	Co-requisites	None
11	Allocated Marks	150
12	Course duration	15 weeks

B) Professional Information:

1- Overall Aims of the Course:

To introduce medical students to the basic facts, concepts and scientific principles of forensic medicine necessary for the practice of medicine, and Introduce a high quality professional medical services to the community, reflecting the mission of our faculty and spirit of our department..

2-Intended Learning Outcomes (ILOs):

a-Knowledge and understanding

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

1-Demonstrate knowledge and understanding of the medical matters that comes in relation to the law statement of the living and dead.
2-Show an understanding of the effects of weapons on the human body
3-List the principles of human traces identification.
4-List the principles of studying medical documents, and medical reports.
5- Discuss the theories and principles , and updates about different medico-legal aspects of living and dead individuals regarding personal identification, diagnosis of death, causes and manner of death, postmortem changes and differentiation between types of wounds and patterns in different areas and their complications, modern trends of personal identification, diagnosis of somatic and brain death, mechanism, causes, manner of death diagnosis of different types of antemortem and postmortem wounds and mechanism of infliction, pattern of wounds in different areas and their complication.
6-Outline the principles, methods, ethics, and various tools of medical researches.
7 - recognize the ethical and legal principles of medical and professional practice
8-Identify the principles of quality assurance in medical practice and basic background of medical ethics.
9-Discuss malpractice claims as regard drug deaths.

b-Intellectual

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

1-Recognize the somatic traumatic Injuries
2-Describe the forensic medical viewpoint of a criminal scene
3-Apply the principles of human live and deceased identification
4-Apply the analytical principles in the study of Autopsy
5-Solve problems related to poisons & toxicology cases
6-Acquire understanding of medical professionalism and problems related to malpractice
7- Analyze medical information in case scenario of clinical forensic medicine and recognize their medico-legal aspects.
8- Demonstrate problem related to malpractice and role of physicians and/or surgeons to save the rights of the patients assaulted.
9- Plan to develop progress in his forensic medicine practice through using consensus to develop guidelines for forensic practice in different medicolegal issues determined by the department council
10- Organize professional medical decisions according to different situations when facing medicolegal problem (during clinical training course).
11- Evaluate common ethical dilemmas and suggest a proper solution
12- Organize medicolegal issues on evidence based manner

c-Professional and practical skills

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

C.1- Perfect basic and recent professional medical skills in forensic practice
C.2- writes a professional medical report and different medicolegal reports, and respecting medico legal aspects
c.3- Select medical methods and tools in forensic sciences
c.4- Use recent technological tools as computer and internet, to serve his career through searches and assignments
c.5- Assess his career and improve others performance through team working during his training course.
6-Respect senior academic/clinical staff
7-Recognize and report errors/poor behaviour in peers
8-Take responsibility for appropriate share of team work
9-Take responsibility for arriving on time
10-Be accountable for deadlines; complete assignments and responsibilities on time
11-Take responsibility for appropriate handling of equipments and chemicals in the laboratory

d-General and transferable skills

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

1-Communicate effectively with the victims and their relatives, and assisting team members
2- Use Search in specified topics on the library books, medical journals, and internet(eg. assignments, journal club).
3- Apply self evaluation and specify his medical educational needs (e.g. through tutorials)
4- Mange time and practice team working through case presentations and seminars
5-Manage the medico-legal and other forensic science experts
6- Perform continuous medical education through updating assignments, and optional training courses.
7- APPLY respect to all colleagues in his team
8-Apply ethical principles on treating the patients
9-use the legal aspects and moral commitments of medical practice
d10- manage cases (live or dead) in careful and respectful manner, according to medical ethics.
11- communicate with others and evaluate them.

Subject	Topic	Hours		Teaching method
		Lect	Lab/Cl	
	History of forensic medicine & toxicology	1		
	Death: Definition and immediate signs and diagnosis	2		seminar

	Death: early signs and the factors affecting the onset and progress	1		
	Late signs of death and the influencing circumstance	1		
	Mummification and adipocere formation	1		
	Injuries: Introduction and medicolegal reports	1		2 h seminar
	Abrasions and bruises: definitions, blunt instrument, external appearance and medicolegal importance.	1		
	Lacerations: definitions, characteristics (incident, suicide and homicide)	1		
	Incised wounds: definition, instruments and characteristics.	1		
	Stab wounds: definition, instruments, characteristics and their medicolegal importance and circumstances.	1		
	Firearm wounds (rifled weapons): definition, rifled weapons (make, types, caliber, cartridges and elements of discharge), characteristics and circumstances.	1		
	Firearm wounds (smooth-bored weapons): definition, smooth-bored weapons (make, caliber and cartridges), characteristics and circumstances.	1		
	Simple burns: definition, severity, clinical and autopsy degrees and surface area. Determination of vitality and age, causes of death.	1		
	Scalds: definition, characteristics, causes of death and circumstances.	1		
	Chemical, radiation and electricity burns.	1		
	Electrocution	1		
	Lightning & Barotruma	1		
	Heat & cold injury	1		
	Estimation of age of injuries	1		

Subject	**Topic**	**Hours**		**Teaching method**
		Lect	Lab/Cl	
	Relation between injury, disease and death.	1		
	Mechanical asphyxia: Introduction, definitions and suffocation.	1		1 h seminar

	Choking & drowning.	1		
	Manual strangulation and strangulation by a ligature.	1		
	Hanging & traumatic asphyxia.	1		
	Sudden natural death: definitions, general diagnosis & cardiovascular causes.	1		1 h seminar
	Sudden natural death: respiratory causes.	1		
	Sudden natural death: CNS causes.	1		
	Sudden natural death: digestive system causes.	1		
	Sudden natural death: causes from other systems.	1		
	Sudden death in infancy Battered child syndrome.	1		1 h seminar 1 h seminar
	Infanticide Death during & after surgical operations.	1		1 h seminar 2 h seminar
	Identification: Identification of unknown bodies.	2		2 h seminar
	Identification of blood stains.	1		
	Identification of seminal & saliva stains.	1		
	Identification of hair.	1		
	Determination of age.	1		
	Determination of sex.	1		
	Identification of unknown bones.	1		
	Sexual offences: Rape.	1		1 h seminar
	Incest & sodomy	1		
	Road traffic accidents: Vehicular accidents.	1		2 h seminar
	Trains' accidents	1		
	Aeroplanes' accidents.	1		
	Total	**45**		
Toxicolo gy	Definition: classification & general diagnosis of poisoning.	1		2 h seminar
	General treatment of poisoning.	1		
	Corrosive poisons	2		
	Metallic irritant poisons.	1		

Subject	**Topic**	**Hours**		**Teaching method**
		Lect	Lab/Cl	
	Non-metallic irritant poisons.	1		
	Analgesics.	1		
	Hypnotics.	1		
	Narcotics.	1		
	Cannabis & Hallucinogens.	1		

	Stimulants.	1		
	Paralytic poisons.	1		
	Convulsants.	1		
	Volatile poisons	2		
	Industrial volatile poisons.	1		
	Total	**16**		

4- Teaching and learning methods

4.1. Lectures
4.2. Practical lessons
4.3. Essays
4.4. Small group discussion

5- Student assessment methods

5.1. Written exam to assess
5.2. Oral exam to assess
5.3 Practical exam to assess

- Assessment schedule

Assessment 1…. Exam 1 written ……..Week 6
Assessment 2 ….. Exam 2 written……..week 12
Assessment 3…….Practical exam……. Week 14
Assessment 4……Written final exam……Week 15
Assessment 5…….Oral exam……Weak 15

- Weighting of assessments

Midterm exams 30 %
Final written examination 30 %
Oral examination 15 %
Practical examination 15 %
Semester work 10 %
Total 100 %

6- List of references

6.1- Course notes
Notes on lectures and practical work .
6.2- Essential text book

6.3- Recommended books

6.5- Web sites

www.Pubmed.com

7- Other Resources / Facilities required for teaching and learning to achieve the above ILOs

Data show

Laboratory equipments

Overhead projector

- We certify that all of the information required to deliver this course is contained in the above specification and will be implemented

Course coordinator:

Name: Prof.

Signature:…….....Date

……..

Head of Department of:

Name: Prof

ignature:……Date ……..

Neuroscience

Third Year: second semester

Neuroscience

Duration (weeks): 8 + 1
Credit hours: 10

I. General information about the course

1	**Course Title**	Neuroscienc
2	**Course Code**	LM 32

3	**Credit hours**	**3 credite h (2 h theoretical + 1h practical)**
4	**Academic Year**	**Fourth Year- First Semester**
5	**Program**	**Laboratory Medicine**
6	**Department**	
7	**Study System**	Integrated System Block with PBL
8	**Teaching Language**	**English**
9	**Pre-requisites**	**Anatomy, physiology, histology**
10	**Co-requisites**	**None**
11	**Allocated Marks**	**150**
12	**Course duration**	**Semister**
13	**Teaching Approaches**	Integrated System Block with PBL

Course description
Neuroscience is the study of the brain and nervous system and how they work to generate behavior, perception, movement, thought, memory and other key functions.

B) Professional Information:

1- Overall Aim of the Course:

Aims

-To provide an critical insight into modern concepts in the neurobiology relevant to major diseases of the nervous system

To identify clinical unmet needs in selected disease areas in neurology

To critique new approaches to disease diagnosis and the assessment of treatment efficacy

To discuss the process of drug discovery, including the pre-clinical phase and clinical drug development

To evaluate and appraise the knowledge required to design, organise and run a clinical trial

To discuss the legal processes underlying intellectual property rights and the governance of clinical trials

To synthesise information regarding the translational process using specific examples in neurological pathology.

III. Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

After completing this course, the students will be able to:

1. identify the basic structural components of the nervous system .
2. understand the basic functions of different parts of the nervous system
3. interpret the functional structural relationships within the nervous system
4. carry out basic clinical procedures for functional assessment of the nervous system.

B- Intellectual skills

After completing this course, the students will:

1. respect senior academic/clinical staff
2. observe professional obligations
3. cope with ambiguity
4. appreciate different views and team work
5. apply the principles of moral reasoning and decision-making to conflicts within and between ethical, legal and professional issues including those raised by economic constrains, and scientific advances

C- Professional and practical skills

After completing this course the students will:

1. communicate with colleagues and faculty
2. demonstrate basic skills and positive attitudes towards teaching others
3. use appropriate tone of voice
4. ask open-ended questions and closed questions appropriately
5. communicate effectively both orally and in writing
6. give the others the opportunity and time to talk, avoiding interruption

D- General and Transferable Skills

After completing this course the students will be able to:

1. apply basic knowledge to explain the clinical data of common neurological problems, on anatomical and physiological basis
2. interpret neurological data including normal findings and classic disorders.
3. analyze and interpretate audiograms and perimeteric charts

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
Anatomy	Spinal cord & its blood supply	4		
	Medulla oblongata & its blood supply	2		
	Pons & its blood supply	2		
	Midbrain & its blood supply	2	4	
	Cerebellum & its blood supply	2		
	Fourth ventricle	2	2	
	Cerebral cortex	6		
	Basal nuclei	2	2	
	Lateral ventricle	2		
	White matter	2		
	Corpus callosum	1	2	
	Fornex	1		
	Commissures	1		
	Internal capsule	2		
	Third ventricle	2		
	Thalamus	2	2	
	Hypothalamus	2		

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
	Tracts & pathways of CNS	6		
	Autonomic nervous system	4		
	CSF & its circulation	2		
	Blood supply of the brain	2	2	
	Meninges, sinuses of brain & dural folds	3		
	Reticular formation	2		
	Limbic system	2	2	
	Development & Congenital anomalies	4		
	Surface, radiological & clinical anatomy	2		
Total		**64**	**16**	**80**
Physiology	Introduction to the CNS	2		
	Sensory receptors, pain pathway & pain control system	4	2	
	Reflex arch & reflexes	2	4	
	Ascending sensory & descending motor pathways & motor function.	4		
	Synaptic junction	2		
	Functions of hypothalamus	2		
	Thalamus, limbic system & basal ganglia	4		
	Function of the cerebellum	2		
	Electrical activity of the brain, sleep and wakefulness	4		
	Brain areas	4		
Total		**30**	**6**	**36**
Histology	Nervous & glial tissue	2	2	
	Cerebrum, cerebellum & spinal cord	2		
	Section through spinal cord & brain stem	2		
Total		**6**	**2**	**8**
Pathology	CNS infections: Meningitis & Encephlitis	3	2	
	CNS tumours: Primary & metastatics	4	2	
	Cerebrovascular diseases of brain	3	2	
	Demylinating & Degenerative diseases	2		
	Neurocutaneous syndromes	2		
Total		**14**	**6**	**20**
Microbiology	**Definition, cause, pathogenesis, lab. Diagnosis of:**			
	Bacteria causing Meningitis: Neisseria meningitdis, Haemophilus influenza, Streptococcus pneumonia, E. coli, Listeria monocytogenes, Mycobacterium tuberculosis, Cryptococcus neoformans.	2	2	

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
	Botulism (Clostridium botulinum), Tetanus(Clostridium tetani).	2		
	Viral meningitis enteroviruses (echoviruses, coxsackie group A and B viruses and the three polioviruses	2	2	
	Encephalitis (Herpes simplex virus, mumps, arenavirus, togavirus)	2		
	Rabies, Prion diseases	2		
	CNS disease due to helminth parasites Toxoplasmosis, Cererbral malaria, Toxocara Hydatid disease, Cysticercosis	2	2	
Total		**12**	**6**	**18**

4- Teaching and learning methods:
METHODS USED:
- Modified lectures.
- Small group discussions.
- Self learning.
- Practical classes.

TEACHING PLAN:
Lectures: teaching hours
Practical classes: teaching hours

Time plan: Item	Time schedule	Total teaching hours	Credit hours
Lectures	2 lectures/week; one hour each		2
Practical	2 hours / 15 week		1
Total	**hrs/week**		**3**

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA: Faculty bylaws
1. Practical attendance.

2. lectures attendance.
3. Log book.
4. Formative assessment by Quiz tests.

5-B) Assessment TOOLS:

Tool	**Purpose (ILOs)**
Written examination	To assess knowledge , understanding and intellectual skills.
Oral examination	To assess knowledge, skills and intellectual functions, and attitude.
Practical examination	To assess knowledge, professional skills and attitude.

5-C) TIME SCHEDULE: Faculty bylaw

Exam	**Week**
1- midterm exam	7th
2- Practical exam	15th
3- Final exam	End of the term
4- Oral exam	End of the term

5-D) Weighting System:

Examination	**Marks allocated**	**% of Total Marks**
3- Mid-term	12	16%
5- Final exam: a- Written b- Practical c- Oral	37.5 15 5	50% 20% 6.7%
6- Assignments & other activities	5.5	7.3%
Total	**75**	

FORMATIVE ASSESSMENT:
Student knows his marks after the Formative exams.

5-E) Examinations description:

Examination	**Description**
1- Shock exams	Quizzes
3- Mid-year	Objective questions, problem solving and case studies

5- Final exam: a- Written b- c- Practical d- Oral	- Objective questions , short essay questions problem solving and case studies. - OSPE exam. using microscopic slides and data show pictures, boxes and snails. - Two sessions.
6- Assignments & other activities	- Assignments, projects, practical books etc
Total	**75 marks**

6- List of references:

6.1- **Basic Materials**:

-Medical Parasitology-Lecture Notes, authorized by the Department.
-Parasitology Atlas.
-CD for practical course.

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: WB Saunders, 2003.

6.4- **Websites:**

- http://www.epu-eg.com/
- 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 White Board and its requirements.
Laser points.
Well equipped laboratories.
Sixty binocular microscopes with planachromate lenses 6x, 10x, 40x and 100x.
Four sets of microscopic slides for demonstration.
Refrigerator and deep Freezer.

Four centrifuges.
Well equipped Video rooms and Video films, slide projector and projector slide sets.
All laboratory requirements for performing the practical work (including chemicals, stains, disposable materials, glass wares, gloves and disinfectants) in sufficient amounts for the use of the huge number of students (500 students).
In addition to, providing **ample time** and **more grades** to be allocated for the new activities (e.g. research assignment and additional practical work) for the execution of all the goals.

Course coordinator:
Head of the Department:
Date: 9/20

Urinary System

Duration (weeks): 4 + 1
Credit hours: 4

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
Anatomy	Kidney	4	4	
	Ureters	2		
	Urinary bladder	2		
	Prostate and urethra	4		
	Pelvis (Boundaries, Types, Diameters, Inlet & Outlet).	4	4	
	Muscles of the pelvis and pelvic diaphragm	2		
	Blood vessels of pelvis & Internal iliac vessels	2		
	Nerves, lumbosacral plexus & autonomic supply	2		
Total		**22**	**8**	**30**
Physiology	Introduction & general functions	2		
	Physiologic anatomy of the kidney & renal blood flow	2		
	Glomerular filtration & GFR	4	2	
	Tubular processing of the glomerular filtrate	4		
	Acidification of urine and regulation of acid-base balance	2		
	Concentration of urine (countercurrent mechanism)	2	2	
	Micturition	2		
Total		**18**	**4**	**22**
Pathology	Congenital anomalies & Cystic diseases of the kidney.	2	2	
	Glomerular Diseases: • Classification & clinical manifestati-ons. • Pathogenesis. • Morphological changes. • Glomerulonephritis presenting as nephritic syndrome. • Nephrotic syndrome.	6	2	

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
	• Chronic glomeruonephritis • Systemic glomerulonephritis & Diabetic Nephropathy			
	Tubular & Interstitial Diseases: • Acute tubular necrosis. • Tubulointerstitia1 nephritis. • Urinary tract infections. • Drug-induced nephritis. • Uric acid nephropathy.	4	2	
	Tumours of the Upper & Lower urinary systems: • Renal cell carcinoma. • Wilm's tumour. • Transitional cell carcinoma.	3	2	
Total		**15**	**8**	**23**
Microbiology	**Definition, cause, pathogenesis and lab. diagnosis of:**			
	Microorganisms causing Urinary tract infections**:** E.Coli, Klebsiella, Proteus, Pseudomonas, Streptococcus faecalis (Enterococcus),Staphylococci, Mycobacterium tuberculosis.	2	2	
	Schistosoma Hematobium	2	2	
Total		**4**	**4**	**8**

Genital System

Duration (weeks): 6 + 1
Credit hours: 6

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
Anatomy	Pelvic periton and Broad ligament	2		
	Female Genital System			
	Ovary and uterine tubes	2	2	
	Uterus	2		
	Vagina and vulva	2		
	Male Genital System			
	Scrotum	2		
	Testis	3		

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
	Spermatic cord, Vas deferens, Epididmis, Ejaculatory duct & seminal vesicles	3	2	
	Penis & Mechanism of ejaculation	2		
	Perineum, Urogenital triangle, Urogenital diaphragm and Perineal Pouches	4	2	
	Surface, Radiological & Clinical anatomy	2		
Total		**24**	**6**	**30**
Physiology	Physiologic anatomy of the male sexual organs, spermatogenesis	2		
	Male sex hormone	4		
	Physiologic anatomy of the female sexual organs, oogenesis	2		
	Monthly ovarian cycle, endometrial cycle & menstruation	4		
	Puberty, menarche, and menopause	4		
	Pregnancy, parpurium and lactation	4		
Total		**20**		**20**
Pathology	**Penile & testicular diseases:** • Inflammatory lesions. • Cryptorchidism. • Testicular neoplasia.	2	2	
	Disorders of the prostate: • Prostatitis. • Nodular hyperplasia. • Prostatic carcinoma.	3	4	
	Diseases of Lower Female genital tract: • Infections of female genital tract. • Vulva1 & vaginal lesions. • Cervical intraepithelial neoplasia & carcinoma.	4	2	
	Ovarian & tubal disease: • Inflammatory conditions. • Functional & non-neoplastic cysts. • Ovarian tumours.	2	2	
	Gestational disorders: • Miscarriage. • Ectopic gestation. • Toxaemia of pregnancy. • Gestational trophoblastic diseases. • placental abnormalities.	4	2	
Total		**20**	**14**	**34**

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ Lab*	
Microbiology	**Definition, cause, pathogenesis and lab. diagnosis of:**			
	Microorganisms causing Syphilis & chancroid**:** (Treponema Pallidum and Haemophils decrui)	3	2	
	Microorganisms causing Gonorrhea (Neisseria gonorrhoea) & non-gonococcal urthritis	2	2	
	Microorganism causing Lymphogranuloma venerum (Chlamydia trachomatis)	1		
	Herpes Simplex Virus & Papilloma virus	2		
	Microorganisms causing vaginitis: Bacterial vaginitis (Gardnerella vaginalis) Fungal vaginitis (Candida albican). Protozoal vaginitis (Trichomonas vaginalis	2	2	
	HIV	2	2	
Total		**12**	**6**	**18**

Hepatobiliary

Hepatology Medicine

A-Administrative Information

B-Professional Information:

1-Program Aims:

1-a)

-provide to the causation, pathogenesis, clinical features, diagnosis, management, and control of infectious diseases of hepatobiliary system.

1-b) Be oriented to the causation, pathogenesis, clinical features, diagnosis, management,and control of hepatological and gastrointestinal diseases.
1-c) Know the line of treatment and prophylaxis of each disease.
1-d) Be well-experienced to the basic interventions at the field of hepatology

2-Intended Learning Outcomes (ILOs) for program

a- Knowledge and Understanding:

By the end of the program, the students should be able to:
a-1) Recognize the updates in viral, bacterial and parasitic diseases of hepatobiliary system.
a-2) Discuss on evidence bases the laboratory diagnostic tests for infectious diseases of hepatobiliary system.
a-3) Identify the new trends in anti-microbial chemotherapy.
a-4) Clarify the advances in the pathogenesis, the clinical features, diagnosis, management, and control of the major hepatic diseases
a-5) Define the updates in vaccines.
a-6) Identify the advances in the basic physiology of immune system and liver physiology.
a-7) Describe in details the causation, pathogenesis, clinical features, diagnosis, management, and control of hepatological diseases.

b- Intellectual Skills

By the end of the program, the students should be able to:
b-1) Apply different types of investigations to reach the diagnosis.
b-2) Apply knowledge and skills in optimal manner to solve patients problems.
b-3) Suggest differential diagnosis and the provisional diagnosis.
b-4) Suggest provisional diagnosis after taking full history of the
b-5) Conclude the final diagnosis.
b-6) Plan to develop progress in the field of infectious diseses Hepatology
b – 7) Argue, and discuss medical issues on evidence based manner

b.8- Formulate a research plan in the area of specialty..
b.9- Participate in risk assessment and management as a part of clinical governance..
b.10- Analyze patient data and evaluate investigation results to reach a diagnosis.

C- Professional and Practical Skills

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

c-4) Evaluate medical methods and tools used in infectious dis., Hepatology and share in its development and progress.
c .5- Use recent technological tools in the professional practice of Hepatology medicine.

d- General and Transferable Skills

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

d-1) - Communicate effectively with his colleagues and patients and their relatives.
d-4) Train juniors and evaluate their performance.

3- Course contents

	Anatomy			
	Topic	**Lecture**	**Practical**	**Total**

	Physiology			
	Topic	**Lecture**	**Practical**	**Total**
	Basic principles of gastrointestinal absorption.			
	Function of Liver and biliary system			
	Hepatic circulation			
	Exocrine function of Pancreas			
	Total			

	Histology			
	Topic	**Lecture**	**Practical**	**Total**
	Histology of the liver 2 1			
	Histology of the biliary tree 2Total			
	Histology of pancreas 2 1			
	Total			

	Biochemistry			
	Topic	**Lecture**	**Practical**	**Total**
	Digestive juices			
	2 Carbohydrates digestion and absorption. 2			
	Lipids digestion and absorption.			
	2 Proteins digestion and absorption.			
	2 Nucleic acids digestion and absorption. 2			
	Vitamins and minerals absorption.			
	2 Liver function tests			
	Total			

	Pharmacology			
	Topic	**Lecture**	**Practical**	**Total**
	Drugs used in some liver diseases & Gollstones.			
	Antiviral drugs			
	Total			

	Pathology			
	Topic	**Lecture**	**Practical**	**Total**
	Pathophysiology of jaundice.			
	Hepatic failure.			
	Cirrhosis: Etiology, pathogenesis, morphology & clinical effects.			
	2 2 Viral hepatitis: types, clinicopathologic syndromes. 1			
	Drug-induced liver diseases.			
	1 2 Alcohol-induced liver diseases. Neonatal cholestasis. 1			
	Gall stones & cholecystits (types, pathogenesis & morphologhy) Pancreatitis (types, pathogenesis & morphologhy)			
	Pancreatic carcinoma			
	Total			

	Microbiology			
	Topic	**Lecture**	**Practical**	**Total**
	Definition, pathogenesis & Laboratory diagnosis: Hepatitis A, B, C, D, E, G			
	Entamoeba species (Histolytica) Hydatid cyst (Echinococcus granulossus).			
	Schistosoma mansoni,			
	Fasciola hepatica			
	Total			

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.
- 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.

TEACHING PLAN:

- Lectures: 29 lectures
- Small classes: 29 practical classes

Time plan:

Item	**Time schedule**	Teaching / hours
Lectures		
Practical classes		
Total		

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		Date
1ST	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
Final exam:	
a-Written	100
b- Practical	50
Total	150

5-D) Examination description:

Examination	**Description**
Finalexam: a-Written MCQ b- Practical	• select(MCQs),Short essay, cases, complete, cross matching • spot identification

6-List of references:

6.1- Department books:

6.2- Essential books(textbook):

6.3-Recommended books:

G. 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 Illustarted 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. .

6.4- Periodicals, Web sites ,etc:

-

7- Facilities required for teaching and learning:

Facilities used for teaching this course include:

-Faculty lectures halls:
-Department lectures halls:
- Audio-visual teaching equipment (Computer, data show,)
- Models and mannequins
- Data show, scientific pictures archives.
-Radiology collections &archive

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

3- Course contents

	Anatomy			
	Topic	**Lecture**	**Practical**	**Total**

	Physiology			
	Topic	**Lecture**	**Practical**	**Total**
	Basic principles of gastrointestinal absorption.			
	Function of Liver and biliary system			
	Hepatic circulation			
	Exocrine function of Pancreas			

	Total			

	Histology			
	Topic	**Lecture**	**Practical**	**Total**
	Histology of the liver 2 1			
	Histology of the biliary tree 2Total			
	Histology of pancreas 2 1			
	Total			

	Biochemistry			
	Topic	**Lecture**	**Practical**	**Total**
	Digestive juices			
	2 Carbohydrates digestion and absorption. 2			
	Lipids digestion and absorption.			
	2 Proteins digestion and absorption.			
	2 Nucleic acids digestion and absorption. 2			
	Vitamins and minerals absorption.			
	2 Liver function tests			
	Total			

	Pharmacology			
	Topic	**Lecture**	**Practical**	**Total**
	Drugs used in some liver diseases & Gollstones.			
	Antiviral drugs			
	Total			

	Pathology			
	Topic	**Lecture**	**Practical**	**Total**
	Pathophysiology of jaundice.			
	Hepatic failure.			
	Cirrhosis: Etiology, pathogenesis, morphology & clinical effects.			
	2 2 Viral hepatitis: types, clinicopathologic syndromes. 1			
	Drug-induced liver diseases.			
	1 2 Alcohol-induced liver diseases. Neonatal cholestasis. 1			

	Gall stones & cholecystits (types, pathogenesis & morphologhy) Pancreatitis (types, pathogenesis & morphologhy)			
	Pancreatic carcinoma			
	Total			

	Microbiology			
	Topic	**Lecture**	**Practical**	**Total**
	Definition, pathogenesis & Laboratory diagnosis: Hepatitis A, B, C, D, E, G			
	Entamoeba species (Histolytica) Hydatid cyst (Echinococcus granulossus).			
	Schistosoma mansoni,			
	Fasciola hepatica			
	Total			

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.
- 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.
TEACHING PLAN:

- Lectures: 29 lectures
- Small classes: 29 practical classes

Time plan:

Item	**Time schedule**	Teaching / hours
Lectures		
Practical classes		
Total		

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		Date
1ST	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
Final exam:	
a-Written	100
b- Practical	50
Total	150

5-D) Examination description:

Examination	**Description**
Finalexam: a-Written MCQ b- Practical	• select(MCQs),Short essay, cases, complete, cross matching • spot identification

6-List of references:

6.1- Department books:

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G. Recommended Text Books and Atlases:

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- 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 Illustarted 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. .

6.4- Periodicals, Web sites ,etc:

-

7- Facilities required for teaching and learning:

Facilities used for teaching this course include:

-Faculty lectures halls:
-Department lectures halls:
- Audio-visual teaching equipment (Computer, data show,)
- Models and mannequins
- Data show, scientific pictures archives.
-Radiology collections &archive

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

Year 4

Diagnostic hematology

[21] Sep. University of Medical and Applied sciences
Faculty of Laboratory Medicine
Department of Hematology
Course Name: Diagnostic hematology
Code:

A. Basic Information:

1. Course title:	Diagnostic hematology 1,2
2. Specialty:	BSc of Laboratory Medicine program
3. Department offering the course:	Hematology
4. Academic year:	semester of 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

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

B) Professional Information:

1-Overall Aim of the Course:

This course aims to:

1. To enable the student to understand the fundamentals of blood as a tissue includes blood cell disorders, special hematology evaluation, quality control and quality assurance.
2. To enable the student to understand the fundamentals of the pathophysiology and the mechanism of coagulation and hemostasis, with emphasis on laboratory diagnostic procedures.

2-Intended Learning Outcomes(ILOs):

2.1. Knowledge and understanding:

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

1. Explain the facts and principles of hematological determinations.
2. Identify microscopically the normal and abnormal cells.
3. Assume responsibility in handling blood specimens, including examination and interpretation of test results.
4. Appreciate the importance of hematological tests to pathologic conditions.
5. Perform hematological tests with precision, accuracy and reliability.
6. Explain the principles of Hemostasis, Coagulation and Fibrinolysis
7. Appreciate the importance of laboratory assays for the diagnosis of Hemostatic disorders
8. Perform the laboratory assays on hemostatis/coagulation with precision, accuracy and reliability
9. Manifest the following values: integrity, honesty, critical thinking, empathy and value for life

b. Intellectual Skills:

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

2.3. Communication skills:

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

1. Communicate clearly, sensitively and effectively with patients and
2. their relatives, and colleagues from a variety of health and social care professions.
3. Establish good relations with other health care professionals
4. regardless their degrees or rank (top management, subordinate or colleague).
5. Communicate effectively with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.

General and transferable Skills:

1. By the end of the course, students should be able to:
2. Present data in an organized and informative manner.
3. Establish appropriate professional attitudes and behaviors in different practice situations.
4. Establish life-longs elf-learning required for continuous professional development.
5. Use the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.
6. Retrieve, manage, and manipulate information by all means, including electronic means.
7. Present information clearly in written, electronic and oral forms.
8. Establish effective interpersonal relationship to Communicate ideas and arguments.

e.Practical Skills:

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

3- Course contents:

week	Topic	
	1. Introduction	1,1 Definition of Terms 1.2 Characteristics of Blood 1.3 Functions of Blood 1.4 Composition
	2. Basic Hematological Methods of Examination	2.1 Collection, handling and preservation of blood for hematologic study

		2.2 Evacuated Tubes: Anticoagulants used in blood preservation.
	3. Morphology of Blood Cells	1.1 Hematopoiesis 1.2 Normal Morphology 1.3 Abnormal Morphology/Variations
	4. Routine Hematology Examinations	4.1 Hemoglobin 4.2 Hematocrit 4.3 RBC count 4.4 Erythrocyte Sedimentation Rate 4.5 WBC count 4.6 WBC Differential Count 4.7. Platelet count
	5. Principle in Blood Cell Counting	5.1 Manual 5.2 Automated 5.3 New Terminologies
	6. Blood Indices and Blood Constant	6.1 Computation 6.2 Interpretation
	7. Blood Smear, Routine and Special Stains	7.1 Cytochemical Stains
	8. Erythrocyte, Leukocyte, and Platelet Pathology; and Diagnostic Laboratory Examinations	8.1 Erythrocyte Disorders 8.2 Leukocyte Disorder 8.3 Platelet Disorders
1	1. Megakaryopoiesis	Stages of Development Platelet Structure Platelet Functions
2	2. Basic Principles of Hemostasis	
3	3. Mechanism and Laboratory Evaluation of Primary Hemostasis	
4	4. Mechanism and Laboratory Evaluation of Secondary Hemostasis	
5	5. Mechanism of Fibrinolysis	

6	6. Hemostatic Disorders Qualitative and Quantitative Platelet Disorders	Disorders of Primary Hemostatis Disorders of Secondary Hemostasis Disorders of Fibrinolysis Disorders due to pathologic and pharmacologic inhibitors of coagulation Disorders Leading to Thrombosis
7	7. Specimen Collection and Processing for Hemostasis Testing	
8	8. Laboratory Evaluation of Platelets	
9	9. Routine Laboratory Evaluation of Coagulation	
10	10. Special Laboratory Evaluation of Fibrinolysis	
11	11. Laboratory Monitoring of Anticoagulant Therapy	
12	12. Quality Control and Quality Assurance in Hemostasis, Coagulation and Fibrinolysis	

4-Teaching and learning methods:

4-A 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:
Students prepare lists of structures to be identified.
Supervised identification will be carried out.
Group discussions are very much encouraged.

4-B Teaching plan:

Lectures: 30 lectures
Practical: 30 hour

4-C Time plan:

Item	Time schedule	Teaching hours
Lectures	2 times/week/15weeks (2 C. hours/week)	30 hours
Practical classes	1 time/week/ 15week (1 C. hours/week)	30 hours
Total	3 C. hours /week/15 week	60 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
1st	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- Final exam: a-Written b- Practical	 100 50
Total	150

5-D) Examination description:

Examination	Description
Final exam: a-Written b- Practical	select(MCQs),Short essay, cases, complete, cross matching

6- List of references:

6.1 Textbook:

1. Henry, John Bernard. CLINICAL DIAGNOSIS AND MANAGEMENT 20TH ED. W.B. Saunders, Philadelphia c. 2001

2. Brown, Barbara. HEMATOLOGY 16TH ED. Lea & Febiger, Philadelphia. 1993

6.2 Recommended books:
1. Turgeon, Mary Louise. CLINICAL HEMATOLOGY" 2ND ED. Little Brown & Co. Boston. 1993.
2. Steininger, Cheryl et al. CLINICAL HEMATOLOGY: PRINCIPLES, PROCEDURES, CORRELATIONS J.B. Lippincott, Philadelphia, USA
3. Lewis, Mitchell Bain Barbara, Bates, Imelda, DACIE & LEWIS PRACTICAL HAEMATOLOGY. 2001, 9th edition
6.3 Periodicals, Web sites, etc:

7- Facilities required for teaching and learning:
Facilities used for teaching this course include:
-Faculty lectures halls:
-Department lectures halls:
- Audio-visual teaching equipment (Computer ,data show,)
- Models and mannequins
- Data show ,scientific pictures archives.

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

Immunohematology

S	Topic	Ac. Hrs		
		Th	Pr	
1	Introduction to immunohematology: Genetic of blood group Characteristics of Ags ,Ab, Complement	2	1	After completing this chapter, the student will be able to: 1
2	ABO Blood Group System: Inheritance Characteristics of Ags,Abs Rare phenotype	4		After completing this chapter, the student will be able to: 1.

3	Rh: Inheritance Characteristics of Ags,Abs Rare phenotype of variants	2 2	1 1	After completing this chapter, the student will be able to:
4	Other Blood group system: Inheritance Characteristics ofAgs,Abs Rare phenotype of variants		1	
5	Leukocyte Ag:	2	1	
6	Platelet Ags	2	1	
7	Blood bank: Historical Importance of Blood blank in Health care field. Main concepts	1 2	6	
8	Blood Donation: Importance of Blood Donation. Advantages of Blood Donation. Donor selection.	8	4	
9	Blood collections: Manual &Automated. Types of Bags. 9.3Blood Collection	6	3	
10	Blood Testing: Immunohematology Testing Serology	1 2	6	
1	Blood Processing:	2	1	

1	11.1 Preparing of RBC. 11.2 Preparing of FFP. 11.3 preparing of Platelets 11.4 Preparing of cryoprecipitate.			
12	Blood component storge.	2	1	
13	Blood Transfusion: 13.1 Historical overview. 13.2Importance of blood component transfusion. 13.3 Threshold of blood component transfusion.		14	
14	Pretransfusion test			
15	Post transfusion Reaction			
16	Investigation of Transfusion Reaction			
17	Therapeutic Apheresis			

A. Basic Information:

1. Course title:	Immunohaematology, Organ transplantation, and banking
2. Specialty:	BSc of Laboratory Medicine program
3. Department offering the course:	Hematology
4. Academic year:	semester of 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
Theoretical	2 credit hrs = 30 hrs
Practical	1 credit = 30 hr

B) Professional Information:

1-Overall Aim of the Course:

This course aims to:

1. To deals with the concepts and principles of different antigens types(HLA antegines, red cell antigen systems) and the application of specific antigens and antibodies to compatibility testing.
2. To deals with the entire blood donation process or transfusion medicine.

2-Intended Learning Outcomes(ILOs):

2.1. Knowledge and understanding:

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

1. Explain the principles and procedures in immunohematology, blood banking collection, processing, preservation, storage and distribution of blood and its components and derivatives
2. Explain the basic concepts in the organization of Blood Bank
3. Establish quality assurance program in Blood Bank
4. Manifest the following values: Integrity. honesty, critical thinking, empathy and value for life.

2.2. Intellectual Skills:

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

2.3. 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 their degrees or rank (top management, subordinate or colleague).
2.2.3 **Communicate effectively** with individuals regardless of their social, cultural, ethnic backgrounds, or their disabilities.

2.4.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-longs elf-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 Skills:

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

1. Perform accurately the techniques of blood grouping, compatibility testing, Coombs test and other special tests in immunohematology

3- Course contents:

week	Topic	
1	1. Introduction	1.1. Review of Genetics 1.2. Historical background 1.3. Blood Group Antigens, Antibodies and Complement
2	2. Major Blood Group System: ABO and Rh	2.1. Inheritance 2.2. Characteristics of Antigen Antibodies 2.3. Laboratory methodology 2.4. Interpretation of test Result 2.5. Resolving discrepancies 2.6. Rare phenotypes
3	3. Minor Blood Group	3.1. Inheritance 3.2. Characteristics of Antigen Antibodies 3.3. Laboratory identification 3.4. Interpretation of test Result 3.5. Resolving discrepancies 3.6. Rare phenotypes and variant antigens
4	4. Leukocyte Antigens	
5	5. Platelet Antigens	

6	6. Blood Donation	6.1. General Concepts 6.2. Review of Technical Standards 6.3. Recruitment and Classification of Donors 6.4. Screening of Donors and Collected Blood 6.5. Blood Collection, Processing, Handling and Storage 6.6. Blood Bank Inventory (refer to Technical Standards) 6.7. Special Blood Donation • Autologous • Apheresis • Therapeutic
7	7. Transfusion Medicine	7.1. Component Preparation 7.2. Methods of Transfusion 7.2.1 Indirect Transfusion 7.2.2 Exchange Transfusion
8	8. Transfusion Reactions	8.1. General Concepts: Classification 8.2. Reaction Work-up
9	9. Laboratory Tests	9.1. Compatibility Testing 9.1.1 Type and Screen 9.1.2 Cross-matching 9.2 Coombs Test 9.3 Elution Techniques 9.4 Antibody Titration Test 9.5 Panel Cell Testing
10	10. Hemolytic Disease of the Newborn (Isoimmune Hemolytic Anemia)	
11	11. Medico-Legal Application of Blood Group Systems	
12	TRANSPLANTATION	1. Terminologies used in Transplantation 1.1.Types of Graft 2. Host response to Transplantation 2.1. Host-versus-Graft reaction 2.2. Graft-versus-Host reaction 2.3. Types of Graft Rejection
13		
14		

4-Teaching and learning methods:

4-A 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.
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B. Supervised identification will be carried out.
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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) Weighting System:

Examination	Marks allocated
3- Final exam: a-Written b- Practical	 100 50
Total	**150**

5-D) Examination description:

Examination	Description
Final exam: a-Written b- Practical	select(MCQs),Short essay, cases, complete, cross matching

6- List of references:

6.1 Textbook:

1. Harmening Denise MODERN BLOOD BANKING AND TRANSFUSION PRACTICES, 3RD EDITION
2. Henry, John Bernard- CLINICAL DIAGNOSIS AND LABORATORY MANAGEMENT 20TH ED. W.B. Saunders Co, Philadelphia PA 2000
3. Widmann, Sally V- TEXTBOOK OF BLOOD BANK AND TRANSFUSION MEDICINE W.B. Saunders Co. Philadelphia 2001
4. Vengelen, Virginia Tyler, TECHNICAL MANUAL, American Association of Blood Banks, 12th edition

6.2- Recommended books:

1. MANUAL OF STANDARDS FOR BLOOD BANKS AND BLOOD CENTERS IN THE PHILIPPINES, BRL-DOH, Manila Phils., First Edition, l996

6.3 Periodicals, Web sites, etc:

7- Facilities required for teaching and learning:

Facilities used for teaching this course include:
-Faculty lectures halls:
-Department lectures halls:
- Audio-visual teaching equipment (Computer ,data show,)
- Models and mannequins
- Data show ,scientific pictures archives.

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

Drug- interference lab test

Course Specification

Faculty: Medicine
Department: Laboratory Medicine
Program: Bachelor Of **Laboratory Medicine**

	I. General information about the course :					
1.	Course Title:	drug- interferance lab test				
2.	Course Code and Number :					
3.	Credit Hours : 2	Lecture	Seminar/Tutorial	Practical	Training	Total
		2	-	-	-	2
4.	Study Level and Semester:					
5.	Pre-requisites (if any):					
6.	Co-requisites (if any) :					
7.	Program in which the course is offered	Bachelor of Medicine laboratory				
8.	Teaching Language:	English				
9.	Study System :	Semester based				
0.	Prepared by :					
1.	Approval date :					
2.	Approved by:					

II. Course Description :
This course is intended as a basic concept to prepare students for understanding the information of general pharmacology, routes of drug administration, drug- labortary interferance. It will help them to understand the underlying general pharmacology and how they can affect laboratory test. This course will be provide as interactive lectures.
III. Course Aims
1. Provides laboratory students with knowledge about basic sciences of drugs and pharmacology. 2. Enable student to distinguish possible drug – laboratory. 3. Enable student to work alone or within team.

VI. Course Intended Learning Outcomes (CILOs) :	
Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A1. Recognize basic sciences pertinent to medical laboratory (Biology, chemistry, etc)	**a.1. Define the different terms in pharmacology and drugs.** **a.2. Classify the different types of drug interaction and drugs effects on laboratory tests.**
A2. Understand principles, theories, and fundamental concepts related to specialization	**a.3. List the group of drugs affecting laboratory test** **a.4. Match the suitable medication with the laboratory test which may be affected.** **a.5 identify the therapeutic drug monitoring in laboratory test.**

Intellectual Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B1. Link between drugs and the role of the laboratory in the diagnosis and treatment	**b.1 Design a list for drug-laboratory effect** **b.2 compose the suitable lab test for diseases**

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
C1. Apply the quality control and quality assurance systems in laboratory (sampling, handling, calibrating,. ..etc).	**c.1. Interpret the rationale for choosing the lab- drug effect**

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
D1. Work alone or within a team efficiently	**d1. Cooperate effectively while working with other health care professional.**

VI. Alignment of CILOs to Teaching and Assessment Strategies		
First: Alignment of Knowledge and Understanding CILOs		
Knowledge and Understanding CILOs	Teaching Strategies	Assessment Strategies
a.1. Define the different terms in pharmacology and drugs.	Lectures and interactive class discussions	Written examination
a.2. Classify the different types of autocoids and drugs acting on them.	Lectures and self-learning (homework)	Written examination And report
a.3. List the group of drugs used to treat the inflammations & gout as well as the best antibiotic used for infectious diseases.	Lectures and interactive class discussions	Written examination
a.4.Match the suitable medication with the diagnosed disease	Lectures and interactive class discussions	Written examination

Second: Alignment of Intellectual Skills CILOs		
Intellectual Skills CILOs	Teaching Strategies	Assessment Strategies
b.1 Design a therapy plan for covered inflammatory diseases based on the types of autocoids.	Lectures and interactive class discussions	Written examination
b.2 Compose the suitable regimens in diseases treatment according to pathogens and symptoms.	Lecture and cooperative learning	Written examination and report

Third: Alignment of Professional and Practical Skills CILOs		
Professional and Practical Skills CILOs	Teaching Strategies	Assessment Strategies
c.1. Interpret the rationale for choosing the suitable Antibiotics and other medication for different diseases based on sampling.	**Assignment**	**Report and presentation**

Fourth: Alignment of Transferable (General) Skills CILOs		
Transferable (General) Skills CILOs	Teaching Strategies	Assessment Strategies
d1. Review the suitable medications for treating different diseases within a team.	**Small group discussion**	**Reports**

VII. Course topics and sub-topics (theoretical and practical) with contact hours and alignment to CILOs

Topics/Units of Course Contents					
First: Theoretical Aspects					
No.	Course Topics/Units	Sub-topics	No. of Weeks	Contact Hours	CILOs
1	Introduction (basic pharmacology)	pharmacodynamics &Drug receptors, Pharmacokinetics: absorption, distribution, metabolism and excretion, Route of drug administration Some important pharmacological terms	1st- 5th	10	**a1, a4, b2, c1, d1**
2	Drug interaction	Drug- drug interaction	5th	2	**a1,a2, a4, b1, d1**

		Drug- food interaction Drug –laboratory test interaction Drug- disease interaction Mechanism of interaction			
3	Midterm Exam.		6th	2	a1, a2, a4, b1, b2
4	Drug lab effect DLE	Introduction, mechanism Examples : antibiotics, antihypertensive, antipsychotics, hormones anticancer, cardiovascular drugs	8th-9th	4	a1, a3, a4, b2, c1, d1
5	Therapeutic drug monitoring	The indication and normal level of common drug monitoring	10th	2	a3, a4, b2, d1
6	Drug abuse and monitoring	Common drug abuse and method of detection	11th	2	a1, a2, a4, b1, b2
7	drug induce diseases	Drug induce hematological disease(anemia , thrombocytopenia, hepatotoxicity, nephrotoxicity, allergic autoimmune disese	12th	2	a1, a2, a4, b1, b2
8	Effect of disease on lab test	Hemolysis	13th	2	

6	Final exam.		14th	2	a1,a2,a3,a4, b1,b2
Total number of weeks and hours			14	27	

VIII. Teaching Strategies
Lecture
Self-learning (homework)
Assignment
Interactive class discussions
Cooperative learning

IX. Tasks and Assignments :

No.	Task/Assignment	CILOs	Week due	Mark
1	Assignment and presentation	c1	9	5
2	Reports	a2, b2, c1, d1	12	5

X. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment	Aligned CILOs
1	Homework/Tasks/Assignments	9	5	5%	c1, d2
2	Reports	12	5	5%	a2, b2, c1, d1
3	Midterm Exam	7	30	30%	a1, a2, a4, b1, b2
4	Final Exam	15	60	60%	a1,a2,a3,a4,b1,b2
Total		15	100	100%	

XI. Learning Resources :

(Author, (Year), Book Title, Edition, Publisher, Country of publishing)

Textbooks
1. Katzung B G, Masters SMJ and Trevor (2015). Basic and Clinical Pharmacology, 13th ed. Mc Graw Hill. India.
Essential References
1. Rang HP, Dale MM and Ritter JM (2012). Pharmacology. 7th ed. CHURCHILL LIVINGSTON London 2. Laurence DR, Bennett PN and Brown MJ (2010). Clinical pharmacology. Ninth ed. CHURCHILL LIVINGSTONE. London 3. Hardman JG and Limbird LE (2010). Goodman & Gilman's the pharmacological basis of Therapeutics. Tenth ed. McGraw Hill. London 4. Harvey RA. Pharmacology (2012). 5th ed. Lippincott Williams & Wilkins. Republic of China 5. Tripathi KD (2010). Essentials of Pharmacology. 6th ed. JAYPEE. India
Electronic Materials and Web Sites
1. British Journal of Pharmacology (2013) 2-The Lancet infectious diseases (2013). 2. http://www.PubMed.com/

I. Course Policies (To be determined by Faculty Deanship):	
Based on university regulations, the following aspects should be figured out:	
1.	**(**Class Attendance**):** Attendance is mandatory for all students for credit to be received and will be monitored. The student is excluded from class if absence percentage exceeds 15% with no excuse or 25% with an accepted excuse.
2.	**(**Tardy**) :**
3.	**(**Exam Attendance/Punctuality**) :** All students registered for the course are required to attend the assigned exams. Dates and locations will be posted prior to the examination date. No re-sit exams are carried out for in-course examinations. If the student misses an in-course examination and his/her excuse was accepted, the missed exam grade will be calculated from the final exam grade. If a student misses the final exam, and unless he/she provides an accepted

	excuse, a grade of F will be granted. If the excuse was accepted, a student may take the exam as first attempt in the second attempt examinations.
4.	**(**Assignments & Projects**) :**
5.	**(**Cheating**) :** Cheating in examinations or tests may take the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones). Exam cheating can also include exam impersonation. A student found guilty of contributing to cheating in examinations or term assignments is also subject to serious academic penalty. Please refer to the academic regulations of UST for further details.
6.	**(**Plagiarism**) :** "To plagiarize is to take ideas or words of another person & pass them off as one's own". Plagiarism or any other form of cheating in examinations, term tests or academic work is subject to serious academic penalty (e.g. suspension or expulsion from the faculty or university).

Diagnostic Microbiology

I. General information about the course

1	**Course Title**	**Diagnostic microbiology I&II**
2	**Course Code**	
3	**Credit hours**	**8h (2h theoretical + 6h practical)**
4	**Academic Year**	**Fourth Year- First and Second semester**

5	**Program**	**Laboratory Medicine**
6	**Department**	**Microbiology and immunology**
7	**Study System**	**Integrated system**
8	**Teaching Language**	**English**
9	**Pre-requisites**	**Microbiology I & II, Immunology**
10	**Co-requisites**	**None**
11	**Allocated Marks**	**300**
12	**Course duration**	**30 weeks**

II. Course Description

Diagnostic microbiology provides students with knowledge on laboratory methods used to diagnose pathogens in clinical specimens. The course is designed to teach students how to collect clinical specimens from patients, culturing and identification of the most probable pathogens. It also focuses on testing the isolated pathogens for their antibiotics susceptibility in vitro. Practical part involves specimen culturing and performance tests required for pathogens identification and antibiotic susceptibility testing. Lectures, lab classes and other teaching strategies are used. Basic bacteriology, immunology, bacteriology I, bacteriology II, medical virology and medical mycology are prerequisites.

III. Course Aims:

Diagnostic microbiology course aims to provide students with

1- Know different types of the clinical specimens.
2- Teach students the suitable techniques to collect appropriate specimens from patients.
3- Know the most common pathogens in each specimen.
4- Use biochemical and serological tests for diagnosis of the isolated microbe.
5- Know methods for diagnosis of different types of uncommon pathogens
6- Be capable to determine the suitable antibiotics to be used in the sensitivity testing

III. Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding

After completing this course, students would be able to:
a1. Describe different types of clinical specimens
a2. Explain proper methods for collection of microbiology clinical samples.
a3. Describe methods of culturing used for isolation of the most likely pathogens.
a4. Explain the principles of biochemical tests used to identify isolated pathogen.
a5. Define the principles of antimicrobial sensitivity testing.
a6. Describe the most important methods of decontamination and infection control.

B- Intellectual skills

b1. Choose the suitable specimens for lab diagnosis.
b2. Create a chart for laboratory diagnosis of common pathogens.

b3. Read the results of biochemical and serological tests
b4. Interpret basic laboratory tests for the diagnosis of infectious diseases
b5. Integrate the microbiology lab result with the clinical and other lab results
b6. Correlate the causal relationship of microbes and diseases based on evidences
b7. Select the best antibiotics to be used in patient treatment

C- Professional and practical skills
c1. Collect the required sample carefully and correctly.
c2. Transport and storage microbiology samples in appropriate conditions.
c3. Perform specimens culturing and staining.
c4. Carry out different biochemical tests required for identification of isolated pathogens.
c5. Perform standard antibiotic susceptibility testing for isolated pathogens
c6. Apply the principles of immunological and molecular techniques for the diagnosis of infectious diseases.
c7. Avoid microbial contamination of patient specimen
c8. Write microbiological report

D- General and Transferable Skills
d1. Respect academic/medical staff and colleagues
d2. Work effectively both in a team and independently.
d3. Communicate ideas and arguments effectively.
d4. Present the medical information in written, oral or electronic forms.
d5. Use the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

IV- Course content

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ lab*	
Diagnostic Microbiology I and II	**General sample collection techniques** • Deal with different types of specimens, transportation and storage of specimens	2		
	Nasal swab: • Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report	2	6	
	Ear swab • Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report	2	6	
	Eye swab • Collection, transportation, cultivation, identification, susceptibility testing of	2	6	

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ lab*	
	isolated pathogen and writing final report			
	Oral cavity and throat swab • Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report	4	12	
	Skin swab • Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report	2	6	
	Genital swab • Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report	2	6	
	Urine specimen • Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report	2	6	
	Stool specimen • Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report	6	18	
	CSF • Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report	2	6	
	Synovial fluid • Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report	**2**	**6**	
	Pus • Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report	2	6	
	Sputum	4	12	

Subject	Topic	Hours		Teaching method
		Lec.	*Clin/ lab*	
	• Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report			
	Blood culture • Collection, transportation, cultivation, identification, susceptibility testing of isolated pathogen and writing final report	4	12	
	Skin scrapings for fungal elements • Collection, transportation, KOH preparation, cultivation, identification and final report	4	12	
	Hair specimens for fungal elements • Collection, transportation, KOH preparation, cultivation, identification and final report	2	6	
Total		**50**	**24**	**98**

V- Teaching methods

1-	Lectures
2-	Lab classes
3-	Group discussion
4-	Problem solving
5-	Presentation
6-	Reports
7-	assignment

V. Tasks and Assignments

No.	Assessment task	Week due	Proportion of final assessment
1	Quiz 1	Week 4	8%
2	Mid exam	Week 8	20%
3	Quiz 2	Week 12	8%
4	Attendance	All weeks	4%
5	Assignments	During the block	10%
6	Practical exam	According to the group	50%

7	Final Exam	End of the block	50%

VI. Learning Resources

Essential materials

Textbooks

- Patricia Tille. Bailey & Scott's Diagnostic Microbiology; 13th edition, Elsevier Health Sciences, 2013
- Thomas Jones Mackie (author), Collee J. G. (editor). Mackie & McCartney Practical Medical Microbiology, Churchill Livingstone, 2008.

Essential books

- Jawetz, Melnick and Adelberg's. Medical Microbiology 27th edition; McGraw-Hill Companies, Inc, 2015.

Periodicals, Web sites

- asmnews@asmusa.org
- http://www.phage.org/black09.htm
- http://www.microbe.org/microbes/virus_or_bacterium.asp
- http://www.microbelibrary.org
- http://www.bact.wisc.edu/Bact330/330Lecturetopics

Clinical and diagnostic immunology

Duration (W): 14 + 1 (Exam)
Credit hours: 2

I-General information about the course

1	**Course Title**	leukemia and Lymphoma
2	**Course Code**	**LM 416**
3	**Credit hours**	**3H (2 h theoretical + 1h practical)**
4	**Academic Year**	**Year 4- semester 1**
5	**Program(s) in which the course is offered:**	**Bachelor of Laboratory Medicine**
6	**Department**	**Clinical Pathology**
7	**Study System**	**Integrated system**
8	**Teaching Language**	**English**
9	**Pre-requisites**	
10	**Co-requisites**	**Non**
11	**Allocated Marks**	**150**
12	**Course duration**	**15 weeks**

B. Professional Information

1. **Overall aims of course:**

provide the students with knowledge on the immune response of the host to different types of infections eg .bacterial, viral and parasitic, the immune damage mediated in the different immune mediated disease eg. immunodeficiency disorders, autoimmune diseases and allergic conditions and the important mechanisms of immune damage so that students can form a sensible approach to the diagnosis, investigation and treatment of patients.

to help the student understand the different molecular techniques, demonstrate the mechanisms of antigen-antibody interactions and demonstrate different methods of serological diagnosis of infectious and autoimmune diseases.

2. Intended learning outcomes of course (ILOs)

a) Knowledge and concept:

a.1 Recall the immune response to infections.

a.2 Understand the different mechanisms of immune damages

a.3.Discuss the evasions of the different organisms to the immune response.

a.4. Identify the different clinical immunological tests and their importance for diagnosis.

a1-Discuss the different techniques for serological diagnosis of infectious diseases as hepatitis A, B, C, EBV, TB.

a2-Descibe different immunological modalities used for diagnosis e.g. ELISA immunofluorescence, etc.

a3 – Identify different molecular procedures: DNA and RNA extraction , nucleic acid amplification techniques as (PCR, Western Blot)

b- Intellectual skills

b.1 Distinguished between protective and hazards defense mechanisms.

b.2 Illustrate diagnostic procedures which utilize the immune response.

b.3. Interpret some of the clinical immunological problems and methods of managing them.

b.3 Integrate the biological and chemical aspects of the immune system to fully understand its normal response in health and diseases.

- Interpret results of different immunological tests in correlation with clinical and laboratory data.

b2- Analyze different diagnostic modalities.

b3- Evaluate the different ways of fallacy of the results

c. Professional and Practical Skills

c1- Gain skills to diagnose and investigate clinical cases which have underlying immunopathology.

c1- Gain skills in applying different immunodiagnostic tests.

c2- Perform different molecular techniques .

c3- Apply quality control laboratory standards.

d. General and transferable skills:

d1- Apply critical thinking.

d2- Demonstrate respect for fellow students during class time.

d3- Utilize the Internet

d1- Demonstrate respect for fellow students during work .

d2- Develop the skills of group work..
d3- Acquire skills of processing data & ideas to get concrete knowledge.

-Communicate with colleagues in other specialties for effective diagnosis

-Advance knowledge and information continuously using different printed and electronic sources

-Communicate with colleagues in other specialties for effective diagnosis

-Perform continuous self life-long learning

-Upgrade his scientific knowledge utilizing all available sources

a- Attitude

e1-Interaction in small group settings
e2-Problem solving competency
e3-Develop skills of observation.
e4-Demonstrate a critical approach and research oriented attitude

3-Course content

Topic	No. C.H.	Lecture	Tutorial	Practical
Immunity to bacterial infection	4	3		2
Immunity to viral infection	4	3		2
Immunity to parasitic infection	4	3		2
Clinical cases of infectious diseases	4		3	2

Non specific immune defects disorders	4	3		2
Antibody deficiency	4	3		2
T cell dysfunctions	4	3		2
Clinical cases of immunodeficiency ,discussion of diagnosis and investigations	4		3	2
Immunological Tolerance and Autoimmunity	4	3		2
Tissue specific autoimmune disease I	4	3		2
Systemic Autoimmunity	4	3		2
Clinical cases for autoimmunity	4		3	2
Immunotherapy&Immunodiagnosis	4	3		2

	Diagnostic tests using different immune cells (Enumeration of different cells by Flow cytometery and Assessment of their functions) Serological diagnosis of diseases by Ag-Ab interactions using: Precipitation reactions: (turbidimetry & nephylometry) Haemagglutination reactions for diagnosis of Bilharzia, toxoplasmosis, ect….. Quality control and management HLA typing (different methods and applications)			

	Tests for diagnosis of immunodefiencies Electrophoretic techniques: Serum protein electrophoresis Agarose gel electrophoresis Nucleic Acid amplification techniques: DNA extraction ,RNA extraction Nucleic Acid amplification techniques: PCR (Qualitative ,Real time PCR,) Detection of Amplification Products: Agarose gel electrophoresis Solid Phase Hybridization and Color Detection Quantification Serological diagnosis of infectious diseases Hepatitis markers EBV, CMV			

Subject	Topic	Hours	Teaching method
		Lec. & Prac	
Clinical and diagnostic immunology	General revision for basic immunology	2	
	Hypersensitivity and allergic disorders • Definitions • Classifications • Pathogenesis • Clinical features • Diagnosis • Treatment	4	

	• Prevention		
	Immunodeficiency diseases • Definitions • Classifications • Pathogenesis • Clinical features • Diagnosis • Treatment	4	
	Tolerance and autoimmunity **A- Tolerance** • Definition • Types of tolerance • Mechanisms of tolerance **B- Autoimmunity** • Definition • Types of autoimmune diseases • Pathogenesis • Clinical features • Diagnosis • Treatment	6	
	Transplantation immunology • Types of grafts • Types of graft rejections • Antigen of major importance in graft rejection • Graft versus host disease • Mechanisms to prevent graft rejection (compatibility tests and immunosuppression) • Fetus as an allograft	4	
	Bone marrow and stem cell transplantation	2	
	Tumor Immunology • Tumor antigens • Immune response to tumors • Evasion of immune response by tumors • Immunotherapy for tumors • Tumor markers	4	
Total		**28**	

4- Teaching and learning methods

4.1- Lecture.

4.2- Practical lessons.

4.3 - Tutorial

5- Student assessment methods

5.1 Written to assess **ILOs a,b.**

5.2 Practical to assess ILOs c

5.3 Oral to assess **ILOs b,e**

5.4 Seminars to assess **ILOs d,e**

6-Assessment Schedule

Midterm exams at 6th and 12th weeks, final exams at 14 and 15 weeks.

7-Weighting of Assessments

Final-term examination…… 30 %

Practical examination……15%

Oral examination …… 15 %

Midterm examinations……..30%

Semester work……..……10%

Total ……100 %

8- List of references

8.1- Course notes: Departmental notes

8.2- Essential books : Kuby's Immunology

8.3- Recommended books: Immunobiology

8.4- Periodicals, Web sites: www.sciencedirect.com

8.1 Immunobiology : the immune system in health and disease / Charles A. Janeway, Jr. ... [et al.].--5th ed.

8.2 Basic Immunology by Abul K. Abbas and Andrew H. Lichtman, Immunology by Ivan Roitt, Jonathan Brostoff, and David Male.

8.3- **Kuby Immunology** (Kindt, **Kuby Immunology**) (7th Edition)
by Thomas J. Kindt, Barbara A. Osborne, Richard A. Goldsby, *Published 2006 by W. H. Freeman, 6th Edition, New york*

8.4. **Essentials of Clinical Immunology, 5th Edition**
Helen Chapel, Mansel Haeney, Siraj Misbah, Neil Snowden May 2006, , Wiley-Blackwell

9- Facilities required for teaching and learning to achieve the above ILOs

Computer, free closed hall , fully equipped Laboratory

10- We certify that all of the information required to deliver this course is contained in the above specification and will be implemented

Course coordinator:

Name: Prof. Dr.

Signature:…….....Date ……..

Head of Department:

Name:

Signature:……Date ……..

leukemia and Lymphoma

I-General information about the course

1	**Course Title**	leukemia and Lymphoma
2	**Course Code**	**LM 416**
3	**Credit hours**	**3H (2 h theoretical + 1h practical)**
4	**Academic Year**	**Year 4- semester 1**
5	**Program(s) in which the course is offered:**	**Bachelor of Laboratory Medicine**
6	**Department**	**Clinical Pathology**
7	**Study System**	**Integrated system**
8	**Teaching Language**	**English**
9	**Pre-requisites**	
10	**Co-requisites**	**Non**

11	**Allocated Marks**	**150**
12	**Course duration**	**15 weeks**

B. Professional Information

1. **Overall aims of course:**

Provide knowledge and skill that allows dealing successfully with common and difficult cases with disease of blood and bone marrow involved in leukemias

-Provide knowledge and skill that allows dealing successfully with common and difficult cases with disease of lymph nodes tissue, blood and bone marrow involved in lymphoma

2. Intended learning outcomes of course (ILOs)

a) Knowledge and concept:

-Identify recent WHO classification of leukemias as for diagnosis, classification, risk stratification and morphological forms

Identify recent WHO classification of lymphoid malignancy as for diagnosis, classification, risk stratification and morphological forms

-update knowledge on the impact of systemic disease on blood and bone marrow
-Update knowledge on the impact of systemic disease on lymph nodes tissue, blood and bone marrow.

b- Intellectual skills

-Analyze deduce extrapolate and evaluate laboratory information to establish diagnosis and appropriate treatment planning
-Perform laboratory testing results for the diagnosis type of leukemia

-Analyze laboratory testing results to risk stratify leukemia

-Perform laboratory testing results for the diagnosis type of lymphomas

-Apply multidisciplinary team work for diagnosing and identifying complications of leukemias
-Analyze laboratory testing results to risk stratify lymphomas

Apply multidisciplinary team work for diagnosing and identifying complications of lymphomas

c. Professional and Practical Skills

-Plan professional courses to improve practice and enhance performance of juniors as regards appropriate blood film bone marrow, immunophenotyping, cytogenetic and molecular investigations

-Plan professional courses for appropriate blood film bone marrow, immunophenotyping, cytogenetic and molecular investigations

Plan professional courses to improve practice and enhance performance of juniors as regards appropriate tissue lymph node biopsy, blood film bone marrow, immunophenotyping, cytogenetic and molecular investigations

Plan professional courses for appropriate tissue lymp node biopsy, blood film bone marrow, immunophenotyping, cytogenetic and molecular investigations

d. General and transferable skills:

-Communicate with colleagues in other specialties for effective diagnosis

-Advance knowledge and information continuously using different printed and electronic sources

-Communicate with colleagues in other specialties for effective diagnosis

-Perform continuous self life-long learning

-Upgrade his scientific knowledge utilizing all available sources

3-Course content

	topics	**Lectures**	**Practical / clinical**	
1	Leukemias WHO classification			
2	Acute leukemia			
3	Chronic leukemia			
4	Lymphoid malignancy WHO classification			
5	Hodgkin lymphomas			
6	Non Hodgkin lymphomas B cell type			
7	Non Hodgkin lymphomas T cell type and NK			
8	Immunosuppression			

9	Hematopoietic stem cell transplantation			

4-Teaching and Learning Methods:

a. Lectures
b. Cas
c-Presentations
d. Assignments/quiz
e. Practical (computer lab class +hospital visits)

-Self learning

-Small group discussion

Student assessment				
Methods of assessment	Essay	Case	Assignment	others
Schedule of assessment	Class test, Assignment , presentation	Mid term	End term 100%	
Weighting of assessment	20%	30%	50%	

6. Lists of references

7. Facilities required for teaching and learning:

Course coordinator:
Head of Department
Date: ……/……/……

•Drug monitoring

General information about the course instructor :

I-General information about the course

1	Course Title	Drug monitoring
2	Course Code	LM 416
3	Credit hours	3H (2 h theoretical + 1h practical)
4	Academic Year	Year 4- semester 1
5	Program(s) in which the course is offered:	Bachelor of Laboratory Medicine
6	Department	Clinical Pathology
7	Study System	Integrated system
8	Teaching Language	English
9	Pre-requisites	
10	Co-requisites	Non
11	Allocated Marks	150
12	Course duration	15 weeks

I. Course Description

This course is intended as a basic concept to prepare students for understanding the information of general pharmacology, anti-microbial, different infectious diseases and different groups of Autocoids. This course requires learning the concepts of physiology as pre-request, and pathology as co-request. It will help them to understand the underlying general pharmacology and how they can choose suitable drugs for the diagnosed infections. This course will be provide as interactive lectures.

II. Course Aims:

1. Provides laboratory students with knowledge about basic sciences of drugs and pharmacology.
2. Assist student to choose the suitable antibiotics according to the site of infections.
3. Enable student to distinguish between different infectious diseases affecting body.
4. Enable student to work alone or within team.

III. Course Intended Learning Outcomes (CILOs) :

1. Define the different terms in pharmacology and drugs.

2. Classify the different types of autocoids and drugs acting on them.

3. List the group of drugs used to treat the inflammations & gout as well as the best antibiotic used for infectious diseases

4. Match the suitable medication with the diagnosed disease

5. Design a therapy plan for covered inflammatory diseases based on the types of autocoids.

6. Compose the suitable regimens in diseases treatment according to pathogens and symptoms.

7. Interpret the rationale for choosing the suitable Antibiotics and other medication for different diseases based on sampling.

8. Review the suitable medications for treating different diseases within a team.

No.	Course Topics/Units	Sub-topics	Week due	Contact Hours
1	Introduction (basic pharmacology)	pharmacodynamics &Drug receptors, Pharmacokinetics: absorption, distribution, metabolism and excretion, Route of drug administration Some important pharmacological terms	1st- 4th	8
2	Autocoids	Histamine and antihistamines, serotonin receptors agonist & antagonists Eicosanoids, and their uses, PAF, bradykinin	5th- 6th	4
3	Midterm Exam.		7th	2
4	Anti-microbial agents	Introduction, Antibacterial agents, antifungal and antiviral	8th- 11th	8
5	Drugs used to treat the inflammations & gout	Non-steroidal anti-inflammatory drugs (NSAIDs), Anti-gout drugs	12th- 14th	6
6	Final exam.		15th	2
	Total		15	

4-Teaching and Learning Methods:

a. Lectures
b. Presentations
c. Assignments/quiz
d. Practical (computer lab class +hospital visits)

5. Student Assessment Methods

a) Presentation to access: communication skills
b) Assignment to access: responsibility
c) Mid exams to access: knowledge
d). final exams to access: learning outcomes

Assessment Schedule:

Assessment 1: 1st class test Week ……..4th
Assessment 2: Assignment 1 Week ……..5th
Assessment 3: 2nd class test Week ……..7th
Assessment 4: Assignment 2 Week ……..12th
Class presentation……13 Onwards

Weighting of assessments

Mid-term examination 30%
Final-term examination 50%
Class test, Assignment, presentation 20%
Total 100 %

6. Lists of references

method of teaching

1. Lectures

2. Self-learning (homework)

3. Interactive class discussions

4. Assignment

5. Cooperative learning

Biostatistics

I-General information about the course

1	**Course Title**	**Biostatistics**
2	**Course Code**	**LM**
3	**Credit hours**	**3H (2 h theoretical + 1h practical)**
4	**Academic Year**	**Year 4- semester 1**
5	**Program(s) in which the course is offered:**	**Bachelor of Laboratory Medicine**
6	**Department**	**Community Medicine Department**
7	**Study System**	**Integrated system**
8	**Teaching Language**	**English**
9	**Pre-requisites**	**Computer skills**
10	**Co-requisites**	**Non**
11	**Allocated Marks**	**150**
12	**Course duration**	**15 weeks**

II. Course Description

The course introduce the basic concepts of statistics , by providing students with the basic knowledge of data collection and presentation as related of their field of study. To describe data, the course provide methods to calculate some statistical measures, as measures of central tendency and dispersion . Also the course introduce the basic concepts of research by providing students knowledge of research methods and sampling as related to their field of study

III. Course Aims:

B. Professional Information

1. **Overall aims of course:**

To provide students with the basic knowledge necessary to collect , present and calculate elementary statistical measures.

2. Intended learning outcomes of course (ILOs)

a) Knowledge and concept:

upon successful completion of this course the student would be able to :

1. Tabulate a given set of data , using an appropriate method
2. Use an appropriate diagrammatic method to present data in a given table
3. Compute measures of central tendency and dispersion for a given set of data
4. Comment on data presented by different methods

5. Explain the difference between observational and experimental studies such as clinical trials
6. Explain the difference between random and opportunistic sampling for health surveys

b- Intellectual skills

1. Interpret graphical displays and numerical summaries for both quantitative and categorical data that are relevant to medical and health sciences studies
2. Explain the uses and limitation of the various measures of central tendency and dispersion

c. Professional and Practical Skills

1- Use the excel cheat and SPSS to describe the data
2- Use the SPSS to compute measures of central tendency and dispersion for a given set of data

d. General and transferable skills:

1- **Establish**life-long self-learning required for continuous professional development.
2- **Present** information clearly in written, electronic and oral forms

3. Contents:

Subject	Topics	Lecture H	Computer lab	Total
	Introduction **Biostatistics as a subject** **Practical fields of using Biostatistics** **Type of the data** **Sources of data**	**2**		
	Collecting data Methods and Techniques of collecting data	**2**	**4**	
	Data Presentation:	**6**	**8**	

	i. Tabular Presentation ***Classification Data*** *** Data tabulation , relative (proportional) frequency & Cumulative frequency** **ii. Graphical Presentation :** *** Line chart** *** Bar chart** *** Pie chart** *** histogram** *** frequency polygon** *** frequency curve**			
	Measures of location for ungrouped and grouped data : *** Arithmetic mean** *** Median (Numerically & Graphically)** *** Mode (Numerically & Graphically)**	**6**	**4**	
	Measures of Dispersion : *** range** ***Inter – quartile range** ***Mean devation** *** variance** *** Standard deviation** *** Relative dispersion (Coefficient of Variation)**	**6**	**4**	
	Introduction to research **Research methods** **Sampling technique**	**6**	**2**	
	Introduction to SPSS **Use SPSS to describe the data** **Use SPSS to compute the central tendency and dispersion measurement**	**2**	**8**	
		30	**30**	**60**

4-Teaching and Learning Methods:

a. Lectures
b. Presentations
c. Assignments/quiz
d. Practical (computer lab class +hospital visits)

5. Student Assessment Methods

a) Presentation to access: communication skills
b) Assignment to access: responsibility
c) Mid exams to access: knowledge
d). final exams to access: learning outcomes

Assessment Schedule:

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Weighting of assessments

Mid-term examination 30%
Final-term examination 50%
Class test, Assignment, presentation 20%
Total 100 %

6. Lists of references

a. Basic Biostatistics : statistics for public health practice by : Gerstman.2007
b. Medical Statistics at a Glance ,2ed Ed(2005)
c. Epidemiology ,Gordi, 3rd Ed, 2004
d. Sullivan, L. Essentials of biostatistics for the health sciences (textbook)

7. Facilities required for teaching and learning:

o Computer with internet availability in class room
o Laptop for teachers
o Multimedia

Course coordinator:

Head of Department
Date: ……/……/……