

1. Course Name:	
Biochemistry 2	
2. Course Code:	
3. Semester / Year:	
Second term for second year students	
4. Description Preparation Date:	
2025 /1/6	
5. Available Attendance Forms:	
Personal attendance	
6. Number of Credit Hours (Total) / Number of Units (Total):	
30 Hours theoretical +60 hours practical / 4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Eyad Ali Othman Email: dr.ieadothman@gmail.com Eyad-othman@alayen.edu.iq	
8. Course Objectives	
Course Objectives	- General goal: To give an idea and basic information in clinical chemistry and develop skills The student's skill in pathological analyses. - Specific objective: For the student to be able to perform clinical examinations and be knowledgeable Preparing different solutions.
9. Teaching and Learning Strategies	
Strategy	- Enhance students' understanding of the basics of life chemistry and applications. - Developing students' critical and analytical thinking. - Preparing students to link theoretical and practical concepts and use them daily life and professional disciplines.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
1	2	- The student gains important information about hormones.	Hormones Classification functions, Metabolism. (Its receptors and types of receptors and degradation)	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam 5- Final exam
2	2	- The student gains important information about hormones.	Hormones Classification functions, Metabolism. (Its receptors and types of receptors and degradation)	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam 5- Final exam
3	2	- The student gains important information about hormones.	Hormones Classification functions, Metabolism. (Its receptors and types of receptors and degradation)	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam 5- Final exam

4	2	- The student learns about the structure of proteins and the types of amino acids	Proteins: Structures and Functions of proteins and enzyme. Amino acids peptides. Structure and metabolism of proteins (Globular proteins Fibrous proteins enzymes Myoglobin and hemoglobin)	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam 5- Final exam
5	2	- The student learns about the structure of proteins and the types of amino acids	Proteins: Structures and Functions of proteins and enzyme. Amino acids peptides. Structure and metabolism of proteins (Globular proteins Fibrous proteins enzymes Myoglobin and hemoglobin)	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class.
6	2	- The student learns about the structure of proteins and the types of amino acids	Proteins: Structures and Functions of proteins and enzyme. Amino acids peptides. Structure and metabolism of proteins (Globular proteins Fibrous proteins enzymes Myoglobin and hemoglobin)	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class.
7	2	The student learns how the body metabolizes the nitrogenous bases necessary to build nucleic acids	Metabolism of purine and pyrimidine	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	1-Multiple choice questions. 2- Oral exam and direct questions in class.

				2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	
8	2	The student learns how the body metabolizes the nitrogenous bases necessary to build nucleic acids	Metabolism of purine and pyrimidine	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class.
9	2	Types of vitamins and biochemical reactions	Vitamins types and Biochemical reactions.	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class.
10	2	Types of vitamins and biochemical reactions	Vitamins types and Biochemical reactions.	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the	1-Multiple choice questions. 2- Oral exam and direct questions in class.

				basic vocabulary of the subject.	
11	2	The student learns about the types of minerals and their importance	Minerals: • Definition, Classification • Dietary sources • Functions • Absorption, synthesis, metabolism, storage and excretion.	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class.
12	2	The student learns about the types of minerals and their importance	Minerals: • Definition, Classification • Dietary sources • Functions • Absorption, synthesis, metabolism, storage and excretion.	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class.
13	2	The student learns about the types of minerals and their importance	Minerals: • Definition, Classification • Dietary sources • Functions • Absorption, synthesis, metabolism, storage and excretion.	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class.
14	2	The student learns how nucleotides are metabolized in the body and the purine and pyrimidine	Metabolism of Nucleotides Contents • Purine nucleotides Metabolism	1-The teacher prepares lectures about the lecture in paper and electronic	1-Multiple choice questions. 2- Oral exam and direct

		nitrogenous bases needed to build nucleic acids.	• Denovo synthesis of purine nucleotides • Salvage pathways of purine nucleotides • Catabolism of purine nucleotides . Pyrimidine nucleotide Metabolism • Denovo synthesis of pyrimidine nucleotides • Salvage pathways of pyrimidine nucleotides • Catabolism of pyrimidine nucleotides.	form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	questions in class.
15	2	The student learns how nucleotides are metabolized in the body and the purine and pyrimidine nitrogenous bases needed to build nucleic acids.	Metabolism of Nucleotides Contents • Purine nucleotides Metabolism • Denovo synthesis of purine nucleotides • Salvage pathways of purine nucleotides • Catabolism of purine nucleotides . Pyrimidine nucleotide Metabolism • Denovo synthesis of pyrimidine nucleotides • Salvage pathways of pyrimidine nucleotides • Catabolism of pyrimidine nucleotides.	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class.
Syllabus of The Practical Course					
1	4	To detect the amino acid tryptophan and sulfur-containing amino acids such as cysteine	Hopkins-Cole Test, Lead acetate Test	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.

				3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	
2	4	The student is able to titrate acidic or basic solutions and determine the concentration of acid or base in the sample. And determine the equivalence point.	Gerngross test and Amino acids Titration Curve		1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
3	4	Identify fats	Lipids tests	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
4	4	It is used to detect oils, fats and glycerin involved in the composition of grease	Ethanol emulsion Test, Acrolein Test, Sudan IV	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
5	4	Enables the student to evaluate the quality of oils and fat	Acid Value, Peroxide Value and Saponification Value	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	1-Multiple choice questions. 2- Oral exam and direct questions in class.

				2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	3- Laboratory work reports.
6	4	Determine the number of double bonds in lipids	Iodine Value and Libermann-Burchard Method).	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
7	4	Identifying nucleic acids	Nucleic acids	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
8	4	To measure the concentration of acids and compounds in the sample	Diphenylamine Method, Fiske-Subbarow Method	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.

				basic vocabulary of the subject.	
9	4	The student was able to measure the concentration of nucleic acid (DNA or RNA) in the sample	Bial's orcinol Method and Quantitation of DNA by A260 nm	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
10	4	The student is able to detect the presence of proteins in the sample	Proteins Biuret protein assay and Folin-Lowry's Method	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
11	4	The student is able to measure the concentration of proteins in the sample	Bradford Method and Microkjeldal Method	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
12	4	Through it, the student will be able to identify the chemical properties of proteins and contribute to	Isoelectric Point (pI)	1-The teacher prepares lectures about the lecture in paper and electronic	1-Multiple choice questions. 2- Oral exam and direct

		studies of protein interactions and separation		form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	questions in class. 3- Laboratory work reports.
13	4	Identify enzymes	Enzymology	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
14	4	This test is used to evaluate the health of your liver and bones. It may help detect liver disorders such as hepatitis or bile duct obstruction, as well as diseases that affect bones such as fractures, osteoporosis, or diseases that lead to bone overactivity.	Alkaline Phosphatase assay and Acid phosphatase assay.	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.
15	4	To detect the ability to decompose sugars in the body and the activity of urealasis enzymes into ammonia	β -amylase assay and Urease assay	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.

				assignments on the basic vocabulary of the subject.	
11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)			1- Clinical Biochemistry Lecture notes .Geoffrey Beckett. Ninth Edition. A John Wiley & Sons, Ltd., Publication 2-Text book of Biochemistry for medical students Prasad R Manjeshwar. Revised Furth Edition 2016 3- Harper's Illustrated. Biochemistry. LANGE medical book Twenty-sixth edition. Robert K. Murray, Daryl K. Granner. Peter A. Mayes, Victor W. Rod well, PhD 4-Lippincott's. Illustrated Reviews: Biochemistry. Fifth Edition		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

1. Course Name:	
Descriptive Biostatistics	
2. Course Code:	
3. Semester / Year:	
Second term for second year students	
4. Description Preparation Date:	
2025 /1/10	
5. Available Attendance Forms:	
Personal attendance	
6. Number of Credit Hours (Total) / Number of Units (Total):	
15 Hours theoretical + 30 hours practical /2 Units	
7. Course administrator's name (mention all, if more than one name)	
Name:	
Email:	
8. Course Objectives	
Course Objectives	Introducing the student to the statistical methods used Collect and display data that the student acquired the skill of conducting scientific research
9. Teaching and Learning Strategies	
Strategy	Enhance students' understanding of the basics of Identify methods Descriptive statistics and its applications. Using the Lecture style and Discussion style.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
1	1	-The student acquires useful information about the Identify methods Descriptive statistics	Definition of Biostatistics, types of data, types of Variables and Sources of data.	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students. 2- The teacher delivers lectures in detail. 3- The teacher requests reports and homework assignments on the basic vocabulary of the subject. 4- Discussion	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
2	1	-The student acquires information about the Methods of data collection and sampling types	Methods of data collection and sampling types	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
3	1	-The student acquires information about Numerical methods of presentation of data.	Numerical methods of presentation of data.	2- The teacher delivers lectures in detail.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
4	1	-The student acquires information about the importance Graphical methods of presentation of data	Graphical methods of presentation of data	3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.

					4- Mid-term exam
5	1	-The student acquires information about the importance of Mathematical methods of presentation of data	Mathematical methods of presentation of data	4- Discussion	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
6	1	-The student acquires information about the importance of Measures of Central Tendency Arithmetic	Measures of Central Tendency (Arithmetic	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
7	1	-The student acquires information about the importance of Mean, Median, Mode).	Mean, Median, Mode).	2- The teacher delivers lectures in detail.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
8	1	The student gains information about the importance Measures of Non-Central location (Percentiles, Quartiles).Biology , medical importance and Lab. Diagnosis of each species	Measures of Non-Central location (Percentiles, Quartiles).Biology , medical importance and Lab. Diagnosis of each species.	3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
9	1	The student gains information about the Measures of	Measures of Dispersion(Range , Variance,	4- Discussion	1-Multiple choice questions.

		Dispersion(Range, Variance, Standard Deviation) of ungroup and group data.	Standard Deviation) of ungroup and group data.		2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
10	1	The student gains information about the importance of carbohydrate metabolism in the body.	Coefficient of Variation, Standard Errs	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
11	1	The student gains information about the importance Identify methods Descriptive statistics and Percentiles	Percentiles	2- The teacher delivers lectures in detail.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
12	1	The student gains information about the importance of Percentiles, Quartiles, and Interquartile Range.	Percentiles, Quartiles, and Interquartile Range.	3- The teacher requests reports and homework assignments on the basic vocabulary of the subject.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
13	1	The student acquires information about the definition Moments, Skewness measurement and Kurtosis Measurement.	Moments, Skewness measurement and Kurtosis Measurement.	4-Discussion	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports.

					4- Mid-term exam
14	1	The student acquires information about the definition of Moments, Skewness measurement and Kurtosis Measurement.	Moments, Skewness measurement and Kurtosis Measurement.	1-The teacher prepares lectures about the lecture in paper and electronic form and presents them to the students.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
15	1	The student acquires information about the definition of Elementary Probability Theory	Elementary Probability Theory	2- The teacher delivers lectures in detail.	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Final exam

Syllabus of The Practical Course

1		The student learns Application of types of data, types of Variables and Sources of data.	Application of types of data, types of Variables and Sources of data.	Discussion	Laboratory work reports.
2		The student learns how to Application of data collection and sampling types	Application of data collection and sampling types	The teacher delivers lectures in detail	Multiple choice questions. Laboratory work reports.
3		The student learns Application of Numerical methods of presentation of data.	Application of Numerical methods of presentation of data.	Discussion	Multiple choice questions. Laboratory work reports.
4		The student learns Graphical methods of presentation of data	Application of Graphical methods of presentation of data	The teacher delivers lectures in detail Discussion	Multiple choice questions.
5		The student learns Application of Mathematical methods of presentation of data	Application of Mathematical methods of presentation of data	The teacher delivers lectures in detail Discussion	Laboratory work reports.

6		The student learns the Measures of Central Tendency (Arithmetic Mean, Median ,Mode).	Measures of Central Tendency (Arithmetic Mean, Median ,Mode).	Discussion	Multiple choice questions. Laboratory work reports.
7		The student learns how to Measures of Non-Central location (Percentiles, Quartiles).	Measures of Non-Central location (Percentiles, Quartiles).	Discussion	Multiple choice questions. Laboratory work reports.
8		The student learns Application of Measures of Dispersion(Range, Variance, Standard Deviation) of ungroup and group data	Application of Measures of Dispersion(Range, Variance, Standard Deviation) of ungroup and group data	delivers lectures in detail	Mid-term exam
9		The student learns some of the distinct reactions of carbohydrates	Coefficient of Variation, Standard Errs	delivers lectures in detail	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
10		The student learns some of the Application of Percentiles, Quartiles and Interquartile Rang.	Application of Percentiles, Quartiles and Interquartile Rang.	Discussion	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
11		The student learns some of the Application of Percentiles, Quartiles and Interquartile Rang.	Application of Percentiles, Quartiles and Interquartile Rang.	Discussion	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam

12		The student learns some of the Application of Moments, Skewness measurement and Kurtosis Measurement	Application of Moments, Skewness measurement and Kurtosis Measurement	The teacher delivers lectures in detail Discussion	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
13		The student learns some of the Application of Moments, Skewness measurement and Kurtosis Measurement	Application of Moments, Skewness measurement and Kurtosis Measurement	The teacher delivers lectures in detail Discussion	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
14		The student learns some of Application of Elementary Probability Theory.	Application of Elementary Probability Theory.	The teacher delivers lectures in detail Discussion	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam
15		The student learns some of Application of Elementary Probability Theory.	Application of Elementary Probability Theory.	The teacher delivers lectures in detail Discussion	1-Multiple choice questions. 2- Oral exam and direct questions in class. 3- Laboratory work reports. 4- Mid-term exam

11. Course Evaluation

30 marks 5 for daily activity and 25 for exam 70 final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	-Aviva P. and Caroline S.: Statistics in medicine 3th Edition ;2012. -Wayne W. Daniel: Biostatistics “Basic Concepts and Methodology for the Health Sciences” 9th Edition ;2010 Professor (Dr.)Amjad Daoud Niazi:”Statistical Analysis In Medical Research 2 nd Edition ; March 2004
Recommended books and references (scientific journals, reports...)	Aviva P. and Caroline S.: Medical statistics at a Glance 3th Edition ;2009
Electronic References, Websites	

1. Course Name:					
General Human Histology					
2. Course Code:					
3. Semester / Year:					
Second Semester/ Second Year					
4. Description Preparation Date:					
5 / 1/ 2025					
5. Available Attendance Forms:					
Practical + Theory					
6. Number of Credit Hours (Total) /					
60 Hours Number of Units (Total): 4 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Asst. Lec. Ali Abdul Hussein Khalaf					
Email: alialhussein222@gmail.com					
8. Course Objectives					
Course Objectives			- Introducing the student to all types of basic tissues and the cells that compose them in the human body. - Classifying cells by studying the shape of the cells that form the tissues and the basic function of these cells, which form the various tissues and organs of the human body. - Enabling the student to examine thin slices of tissue under a light microscope.		
9. Teaching and Learning Strategies					
Strategy		- Enabling the student to prepare tissue slides in the laboratory - The student acquires the necessary skills in how to use the light microscope to view tissue slices and study tissue structure - Holding discussion dialogues with students - Giving traditional lectures through data show.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
1	2 Hours	Identify the tissues of the	Circulatory	Lectures and presentations	Rapid daily, monthly and

		vascular system	system		quarterly tests
2	2 Hours	Identify the tissues of the lymphatic system	Lymphoid system- Lymphatic vessels- Lymph	Lectures and presentations	Rapid daily, monthly and quarterly tests
3	2 Hours	Identify the tissues of the lymphatic system	Lymphoid organs	Lectures and presentations	Rapid daily, monthly and quarterly tests
4	2 Hours	Identify the tissues of the respiratory system	Respiratory system	Lectures and presentations	Rapid daily, monthly and quarterly tests
5	2 Hours	Identify the tissues of the digestive system	Digestive system/ Part one- Oral cavity	Lectures and presentations	Rapid daily, monthly and quarterly tests
6	2 Hours	Identify the tissues of the digestive tract	Digestive system/ Part two- Gastrointestinal tracts.	Lectures and presentations	Rapid daily, monthly and quarterly tests
7	2 Hours	Identify the tissues of the accessory organs of the digestive system	Digestive system/ Part three- Accessory Glands	Lectures and presentations	Rapid daily, monthly and quarterly tests
8	2 Hours	Identify the tissues of the urinary system	Urinary system	Lectures and presentations	Rapid daily, monthly and quarterly tests
9	2 Hours	Identify the tissues of the urinary system	Urinary system	Lectures and presentations	Rapid daily, monthly and quarterly tests
10	2 Hours	Identify the tissues of the endocrine glands	Endocrine system	Lectures and presentations	Rapid daily, monthly and quarterly tests
11	2 Hours	Identify the tissues of the endocrine glands	Endocrine system	Lectures and presentations	Rapid daily, monthly and quarterly tests
12	2 Hours	Identify the tissues of the male reproductive system	Male reproductive system	Lectures and presentations	Rapid daily, monthly and quarterly tests
13	2 Hours	Identify the tissues of the female reproductive system	Female reproductive system	Lectures and presentations	Rapid daily, monthly and quarterly tests
14	2 Hours	Identify the tissues of the sensory organs	Sense organ	Lectures and presentations	Rapid daily, monthly and quarterly tests
15	2 Hours	Identify the tissues of the skin	The integumentary system- Skin	Lectures and presentations	Rapid daily, monthly and quarterly tests
Syllabus of The Practical Course					
1	2 Hours	Identify the tissues of the vascular system	Circulatory system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
2	2 Hours	Identify the tissues of the lymphatic	Lymphoid system	Practical experiences and	Rapid daily, monthly and

		system		presentations	quarterly tests
3	2 Hours	Identify the tissues of the respiratory system	Respiratory system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
4	2 Hours	Identify the tissues of the respiratory system	Respiratory system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
5	2 Hours	Identify the tissues of the digestive system	Digestive system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
6	2 Hours	Identify the tissues of the digestive tract	Digestive system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
7	2 Hours	Identify the tissues of the accessory organs of the digestive system	Digestive system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
8	2 Hours	Identify the tissues of the urinary system	Urinary system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
9	2 Hours	Identify the tissues of the urinary system	Urinary system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
10	2 Hours	Identify the tissues of the endocrine glands	Endocrine system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
11	2 Hours	Identify the tissues of the endocrine glands	Endocrine system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
12	2 Hours	Identify the tissues of the male reproductive system	Male reproductive system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
13	2 Hours	Identify the tissues of the female reproductive system	Female reproductive system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
14	2 Hours	Identify the tissues of the sensory organs	sense organ	Practical experiences and presentations	Rapid daily, monthly and quarterly tests
15	2 Hours	Identify the tissues of the skin	The integumentary system	Practical experiences and presentations	Rapid daily, monthly and quarterly tests

11. Course Evaluation

Theoretical course exam is 25 marks, practical is 10, and activity is 5 marks
The final exam for a theoretical course is 35 and practical is 25 marks

12. Learning and Teaching Resources

Required textbooks (curricular books any)	James S. Lowe, Peter G. Anderson - Stevens & Lowe's Human Histology-Mosby (2015)
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Victor p. Eroschenko, difiore's atlas of histology with functional correlations eleventh edition.
Electronic References, Websites	https://www.ncbi.nlm.nih.gov/books/NBK557663/ https://www.cancer.gov/publications/dictionaries/cancer-terms/def/histology

1. Course Name:					
Human Physiology (2)					
2. Course Code:					
Human Physiology -2025					
3. Semester / Year:					
Second Term 2025					
4. Description Preparation Date:					
15-1-2025					
5. Available Attendance Forms:					
Live lectures + Al Ain University platform + (google classroom) + educational technology					
6. Number of Credit Hours (Total) / Number of Units (Total):					
30 Hours theoretical +60 hours practical / 4 units					
7. Course administrator's name (mention all, if more than one name)					
Name: <i>Assistant prof.Dr. Salim A.S.Al Mosawi</i>					
Email: salim.abdullah@alayen.edu.iq					
8. Course Objectives:					
Course Objectives		• Identify the functions of the different body systems. • Describe the mechanism of action of the different body systems and the sequence of physiological events associated with them. • Estimate the normal values of vital activities in relation to different biological conditions. • Explain the amount of change in the normal functions of the different body systems and their pathological conditions. • Expand knowledge through periodicals, medical books and the Internet. • Apply the basic scientific building blocks acquired to conduct scientific research and medical studies. • Identify the functions of the different body systems.			
9. Teaching and Learning Strategies					
Strategy		• In-person teaching (lecture). • Small scientific circles discussions • Blended learning and e-learning (Google Classroom). • Interactive lecture using PowerPoint • Daily and monthly tests and Quiz			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
1	2	Providing students with functional information on the physiology of the	Digestive Physiology: GIT: Part General Function, Food Movement, and Control. Swallowing Reflex	Lecture + PowerPoint	Quiz

		human digestive system.			
2	2	- Student knowledge of the mechanism of chemical digestion.	Digestive Physiology: GIT Chemical Digestion, Absorption, and Control. Defecation Reflex	Lecture + video presentation	Evaluation of students' performance activities
3	2	Developing students' scientific thinking skills regarding the functions of the auxiliary organs in the digestive system.	Digestive Physiology: Accessory Organs: Secretion and Their Role in Digestion. Secretion Control.	Lecture + video presentation	Ask open-ended questions
4	2	Providing students with basic information about the chemical composition of urine.	Urinary Physiology: General Functions of US. Urine: Definition and Normal Constituents. Physical and Chemical Property of Urine.	Lecture + PowerPoint	Short Test MCQ
5	2	- Knowing the role of the kidneys in forming urine, maintaining body fluids, and their role in acid-base balance.	Role of Kidney in Urine Formation and Maintenance of Body Fluids and The Role In Acid-Base Balance.	Lecture + video presentation	Selective discussion
6	2	- Identifying the urinary tract, its functions, and then - Identify the physiology of endocrine glands, their types and secretion's factors affecting it.	Urinary Tract: Parts and Function. Urine Hemodynamic and Control. Normal Urine Daily Volume and Factors Affecting.	Lecture + video presentation	Electronic test
7	2	- Knowledge of the physiology of endocrine glands, their types and secretion.	Endocrine Physiology: Endocrine Glands Types and Secretion. Hormone: Types, Normal Value, Function and Control of Secretion.	Lecture + video presentation	Electronic test (mobile)
8	2	- Acquires information about reproduction, reproduction, and the male reproductive system.	Reproductive Physiology: Male Sex Physiology: Function of Genital Organs. Male Sex Hormones: Normal Value, Production, Control, and Their Role in Reproduction.	Lecture + video presentation	Evaluation of the activity report of the factors affecting the male reproductive system

9	2	- Acquires information about reproduction, reproduction and the female reproductive system.	Female Sex Physiology: Function of Genital Organs. Normal Value of Female Sex Hormone, Production, and Control. Female Cycle, Pregnancy, Parturition, and Lactation: Hormonal Fluctuation and Control.	Lecture + video presentation	A mock test of pointing
10	2	Developing scientific thinking among students to understand the mechanics of muscle fibers.	Muscles Physiology: Types and Functions. Generation of Action Potential, Contraction, and Sliding-Filament theory.	Lecture + video presentation	Electronic test on the Al Ayen University platform
11	2	- Getting to know the nervous system - Knowing the types of neurons	Nervous Physiology: Neuroglia: Definition, Types, and Function. Neurons: Definition, Types, and Function. CSF: Composition, Function, and Clinical Importance	Lecture + video presentation	Interactive online test
12	2	Providing students with information about the concept of neural entanglement and neural connection.	Generation of Action Potential. Neuronal Conduction: Types and Speed. Synapsis: Types, and Function.	Lecture + video presentation	Interactive Questions and Answers
13	2	- Knowing the functions of the central nervous system	CNS: Parts and Functions	Lecture + video presentation	Evaluative discussion
14	2	- Knowledge of the functions of the peripheral nervous system	Spinal Cord: Parts, General Functions, and Spinal Reflexes. PNS: Types and Function.	Lecture + video presentation	Questions and Answers
15	2	Providing students with scientific knowledge of the term "human sensory system."	Sensory System: Classification and General Function. Special Sense Organs: Types and General Function	Lecture + video presentation	Comprehensive Test MCQ
Syllabus of The Practical Course					
1	2	Training students on how to examine a urine sample and how to record the results	Urine Sample: Importance, Method of Collection, Preparation, Transport and Storage Physical Examination of Urine Sample.	Show steps My practical experience	Group results evaluation
2	2	- Training students on the steps of microscopic urine examination and	Microscopic Examination of Urine: The identification of Epithelial Cells, Blood Cells, crystals, casts, etc.	Show steps My practical experience	Group results evaluation

		recording the results.			
3	2	- Training students to diagnose bacteria, viruses and yeasts in urine samples.	Microscopic Examination of Urine: The identification of Bacteria, Yeast, Mucus, Casts,.... Etc.	Show steps My practical experience	Group results evaluation
4	2	Develop skills in examining and diagnosing a sample (urine)	Repeat	Show steps My practical experience	Group results evaluation
5	2	Training students on chemical examination of urine sample	Chemical Examination of Urine	Show steps My practical experience	Group results evaluation
6	2	Training students on chemical examination of urine sample	Repeated	Show steps My practical experience	Paper test
7	2	- Training students on methods of semen sample collection.	Semen Analysis: Type of Collection & Physical Examination	Show steps My practical experience	Group results evaluation
8	2	- Training students to count sperm in a sample under a microscope.	Semen Analysis: Cell Counting Technique.	Show steps My practical experience	Group results evaluation
9	2	- Training students' skills in examining semen samples and distinguishing the effectiveness and activity of sperm.	Semen Analysis: Motility, Viability, & Morphology.	Show steps My practical experience	Group results evaluation
10	2	- Enhancing students' performance skills in examining semen samples.	Repeat Semen Analysis.	Show steps My practical experience	Group results evaluation
11	2	- Ability to use a stethoscope	Stethoscope and its uses.	Show steps My practical experience	Group results evaluation
12	2	Developing students' skills to measure normal and abnormal blood pressure.	Blood Pressure	Show steps My practical experience	Evaluate each student's performance
13	2	- Enhancing students' skills in measuring blood pressure	Repeated	Show steps My practical experience	Group results evaluation

14	2	- Training on measuring the erythrocyte sedimentation rate	Erythrocyte Sedimentation Rate (ESR)	Show steps My practical experience	Group Test
15	2	- Training on the steps of measuring body temperature	Body Temperature	Show steps My practical experience	Written test

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Alkinany, Azza Sajid(2016) :: Introduction to Human Physiology, Dar Wael for Publishing m Amman.
Main references (sources)	Cindy L. Stanfield: <u>Principles of Human Physiology, 6th edition.</u> Tortora, Gerard J.; Derrickson, Bryan H.: Principles of Anatomy and Physiology, Control Systems of the Human Body Vol. 3, 10th Edition
Recommended books and references (scientific journals, reports...)	Martin Caon (2020): <u>Examination Questions and Answers in Basic Anatomy and Physiology</u>, School of Health Sciences Flinders University Bedford Park , South Australia , Australia
Electronic References, Websites	1) Physiology Lecture Slides San Diego Miramar College. 2) https://www.youtube.com/watch?v=dlHrbHN7udg. 3) UO physiology lecture to explore mechanics of walking Oregon News.

1. Course Name:	
Medical Bacteriology 2	
2. Course Code:	
3. Semester / Year:	
Second Semester/ second year	
4. Description Preparation Date:	
10-01-2025	
5. Available Attendance Forms:	
Attendance in classroom	
6. Number of Credit Hours (Total) / Number of Units (Total):	
30 Hours theoretical +60 hours practical / 4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Abbass Houssein Haydar Email: abbass.haydar@alayen.edu.iq	
8. Course Objectives	
Course Objectives	By the end of this course, students will be able to: 1- Understand the general characteristics of Gram-negative bacterial species. 2- Explore the pathogenesis of Gram-negative bacteria. 3- Learn the diagnostic procedures for identifying Gram-negative bacterial infections.
9. Teaching and Learning Strategies	
Strategy	1- Interactive lectures supplemented by multimedia presentations, case studies, and real-life examples are used to illustrate key concepts and principles. 2- In addition to lectures, students engage in laboratory sessions where they gain hands-on experience in culturing, identifying, and analyzing bacterial specimens commonly encountered in clinical settings. These practical sessions are designed to reinforce theoretical knowledge and develop essential laboratory skills crucial for diagnosing infectious diseases.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Syllabus of The Theoretical Course					
1	2	Learn about the pathophysiology and diagnosis procedure of Neisseria prokaryotic cells	Neisseria	Interactive lectures supplemented by multimedia presentations	Oral evaluation
2-3	4	Learn about the pathophysiology and diagnosis procedure of enteric Gram negative rods: E. coli, Klebsiella, Proteus.	Enteric Gram negative rods: E. coli, Klebsiella, Proteus.		Quiz
4	2	Acquiring knowledge about the pathophysiology and diagnosis procedure of enteric Gram negative Pseudomonas and Acinetobacter.	Pseudomonas and Acinetobacter		Oral evaluation
5	2	Acquiring knowledge about the pathophysiology and diagnosis procedure of enteric Gram negative Shigella and salmonella	Shigella and salmonella		Quiz
6	2	Learn about the pathophysiology and diagnosis procedure of Yersinia	Yersinia		Oral evaluation
7	2	Acquiring knowledge about the pathophysiology	Vibrio		Quiz

		and diagnosis procedure of Vibrio			
8-9	4	Learn about the pathophysiology and diagnosis procedure of Campylobacter and Helicobacter.	Campylobacter and Helicobacter.		Oral evaluation
10	2	Acquiring knowledge about the pathophysiology and diagnosis procedure of Haemophilus	Haemophilus		Quiz
11	2	Learn about the pathophysiology and diagnosis procedure of Bordetella and Brucella	Bordetella and Brucella.		Oral evaluation
12-13	4	Acquiring knowledge about the pathophysiology and diagnosis procedure of Chlamydia and Spirochaetes	Chlamydia and Spirochaetes		Quiz
14	2	Acquiring knowledge about the pathophysiology and diagnosis procedure of Mycobacterium	Mycobacterium		Quiz
15	2	Acquiring knowledge about pathophysiology and diagnosis procedure of Mycoplasma and Rickettsia	Mycoplasma and Rickettsia		Quiz
Syllabus of The Practical Course					
1	2	- Describe the initial identification methods for Neisseria species	Initial identification of Neisseria	Provide pre-lab lectures and perform live	

		using microscopy and culture. - Explain the use of selective media, such as Thayer-Martin agar, for culturing Neisseria.		demonstrations	
2	2	- Interpret results from biochemical and molecular tests, including the API system.	Biochemical tests, API	Provide pre-lab lectures and perform live demonstrations	Practical evaluation (asking students to prepare and observe slide)
3-4	4	- Identify common characteristics of enteric Gram-negative rods, including growth patterns and lactose fermentation on selective and differential media (e.g., MacConkey agar). - Perform and interpret biochemical tests, such as IMViC, for enteric bacterial differentiation.	Identification of Enteric Gram-negative rods: E. coli, Klebsiella, Proteus, Pseudomonas, Acinetobacter, Shigella and salmonella.	Provide pre-lab lectures and perform live demonstrations	Practical evaluation (asking students to prepare growth media)
5	2	- Explain the initial steps in identifying Yersinia species, focusing on cold enrichment and culture methods. - Recognize key biochemical characteristics and pathogenic significance.	Initial identification of Yersinia	Provide lab lectures and + showing videos	
6	2	- Describe the methods for isolating and identifying Vibrio cholerae, including	Initial identification of V.cholera	Provide pre-lab lectures and showing videos	Practical evaluation (asking students to prepare

		the use of alkaline peptone water and TCBS agar. - Discuss the key biochemical tests for confirming <i>Vibrio cholerae</i> identity			streak plates)
7	2	- Explain the unique growth requirements for <i>Campylobacter</i> and <i>Helicobacter</i>, including microaerophilic conditions. - Identify selective media, such as Skirrow's agar, for culturing these bacteria. - Interpret biochemical and molecular tests specific to these genera.	Initial identification of <i>Campylobacter</i> and <i>Helicobacter</i>	Provide pre-lab lectures and showing videos	
8-9	4	- Describe the culture requirements for <i>Haemophilus</i> species, including X and V factor dependency. - Recognize the safety precautions and techniques for handling <i>Brucella</i> in a clinical laboratory.	Initial identification of <i>Haemophilus</i> and <i>Brucella</i>	Provide pre-lab lectures and showing videos	Practical evaluation (asking students to identify the different shape of bacterial colonies and to do Gram staining)
10-11	4	- Discuss the limitations of culturing <i>Chlamydia</i> and <i>Spirochaetes</i> using conventional methods. - Explain the use of molecular	Initial identification of <i>Chlamydia</i> and <i>Spirochaetes</i>	Provide pre-lab lectures and showing videos	Quiz

		techniques and serology for identification. - Understand dark-field microscopy for Spirochaetes.			
12	2	- Describe the staining techniques (e.g., Ziehl-Neelsen and auramine-rhodamine) for identifying Mycobacterium. - Explain the use of Lowenstein-Jensen medium and other culture methods for isolating Mycobacterium.	Initial identification of Mycobacterium	Provide pre-lab lectures and perform live demonstrations	Oral evaluation
13-14	4	- Discuss the unique culture and identification methods for Mycoplasma, including the use of specialized media. - Explain the serological and molecular techniques for detecting Rickettsia.	Initial identification of Mycoplasma + Rickettsia	Provide pre-lab lectures and showing videos	Oral evaluation
15					
11. Course Evaluation					
The student grades are distributed from 100 points to the full course and the student examines two university examinations. The midterm exam is for 40 points and divided according to the following: - 5 points of class participation and attendance - 15 points Written Practical Examination - 20 points Theoretical Examination The Final is for 60 points and divided according to the following: - 25 points for practical exam - 35 points for theoretical exam					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					

Main references (sources)	Jawetz, Melnick, & Adelberg's Medical Microbiology, Twenty-Fifth Edition
Recommended books and references (scientific journals, reports...)	Global Publishing Houses: Springer, Elsevier, pubmed
Electronic References, Websites	microbenotes.com microbeonline.com

Course Description Form

1. Course Name:					
Medical Parasitology 2					
2. Course Code:					
3. Semester / Year:					
2 semester /2024 -2025					
4. Description Preparation Date:					
1/2025					
5. Available Attendance Forms:					
Morning/evening					
6. Number of Credit Hours (Total)					
30 h / Number of Units (Total) 4 unit					
7. Course administrator's name (mention all, if more than one name)					
Name: Hussain Ali kareem Email: ha682997@gmail.Com					
8. Course Objectives					
Course Objectives			• A knowledge: •- It is to provide an idea and basic informat about parasites and the diseases they cause and develop the student's ability and skill understanding their pathological analyses. 2- The student learns the skill, how and wh parasites are located - 3- The student learns the skill of conduct pathological examinations and different method diagnosis. - Evaluation methods 1- Conducting daily qu exams Quizzes 2- Conducting monthly exams 3- Conducting semester and final exams norms in biological studies • C3: Working as a team		
9. Teaching and Learning Strategies					
Strategy		Lectures and practical lessons - outcome-based learning - learning project-based learning - group work-based learning - problem-based learning - community-based learning - self-learning.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2T + 4 P	The student will learn for type of helminth and identify to student for diagnosis ,life cycle	Platyhelminth: General 2 16 characters. Class cestoda: General characters.	Lectures and practical lessons -Discussion	Theory exams - practical -

		and pathogenicity for Teania saginata: Teania solium	Teania saginata: Teania solium: Morphology & the adult worm and the larval stages of each species, biology, life cycle of each species, pathogenicity of		
			each species, Lab. Diagnosis	Brainstorming	Discussions
2	2T + 4 P	The student will learn for type of helminth and identify to student for diagnosis ,life cycle and pathogenicity Hymenolepis nana, Hymenolepis diminuta. Diplidium caninum, Diphyllobothrium latum,	Hymenolepis nana, Hymenolepis diminuta. Diplidium caninum, Diphyllobothrium latum, Biology, morphology, pathogenicity of each species, Lab. Diagnosis	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
3	2T + 4 P	identify to student for diagnosis ,life cycle and pathogenicity for Echinococcus granulosus	Echinococcus granulosus. Echinococcus multilocularis. Biology, life cycle, pathogenicity, medical importance of hydatid cyst disease ,Lab	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
5+4	2T + 4 P	The student will learn and identify Trematoda and study of diagnosis ,life cycle and pathogenicity for Schistosoma	Class Trematoda: General characters. Genus Schistosoma. Species of human schistosoma, life cycle. Schistosoma hematobium. Schistosoma mansoni. Biology of adult worm, habitat, pathogenicity, Lab. diagnosis	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
6	2T + 4 P	study of diagnosis ,life cycle and pathogenicity for Fasciola hepatica and	Fasciola hepatica Biology , life cycle, pathogenicity, Lab	Lectures and practical lessons -Discussion Brainstorming	Theory exams practical Discussions

			diagnosis. Nemathelminthis. Nemtoda, general characters.		
7	2T + 4 P	The student will learn for type of helminth and identify to student for diagnosis ,life cycle and pathogenicity for <i>Ascaris lambricoides</i> <i>Enterobius vermicularis</i>	<i>Ascaris lambricoides</i> 1 <i>Enterobius vermicularis</i> . Biology of adult worm,life cycle, pathogenicity and medical importance of Each species, Lab. Diagnosis of each species	- Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
8	2T + 4 P	identify to student for diagnosis ,life cycle and pathogenicity for <i>Trichuris trichura</i> . <i>Trichenala spiralis</i>	<i>Trichuris trichura</i> . <i>Trichenala spiralis</i> . Biology , life cycle , pathogenicity, medical importanceof each species, Lab. Diagnosis of each species.	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
9	2T + 4 P	The student will learn for diagnosis ,life cycle and pathogenicity for <i>Strogyloides stercoralis</i>	<i>Strogyloides stercoralis</i> . Biology, life cycle, pathgenicity, medical importance, Lab. Diagnosis	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
10	2T + 4P	The student will learn for diagnosis ,life cycle and pathogenicity for <i>Ancylostoma duadenale</i> , <i>Necator Americans</i> (Hooks worm)	<i>Ancylostoma duadenale</i> , <i>Necator Americans</i> (Hooks worm) Biology, life cycle, pathogenicity, medical importance of each species, Lab. Diagnosis	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

11	2T + 4P	The student will learn for Biology ,diagnosis, importance of each species, life cycle and pathogenicity for filariae	The filariae: Biology, pathogenicity and medical importance of each species, Lab. Diagnosis of each species. Visceral larvae migrance, Cutaneous larvae migrance	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
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12	2T + 4P	Identify of student for Entomology	Entomology	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
13	2T + 4P	The student will learn for Biology , importance of each species, and pathogenicity for Sand fly, Black fly	Sand fly, Black fly	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
14	2T + 4P	The student will identify for Biology , importance of each species, and pathogenicity for Mosquitoes	Mosquitoes	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions
15	2T + 4P	The student will identify for Biology , importance of each species, and pathogenicity Ticks; Mites and Fleas	Ticks; Mites and Fleas	Lectures and practical lessons -Discussion Brainstorming	Theory exams - practical - Discussions

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reportsetc

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Essentials of Medical Parasitology 2. Principle of Medical Physiology 3. Pinker book 2013
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Main references (sources)	Medical Parasitology: A Self-instructional T
Recommended books and references (scientific journals, reports...)	1- NCBI 2- PubMed 3- You tube
Electronic References, Websites	Mehlhorn, Heinz, ed. "Encyclopedic reference parasitology: Biology, structure, function." (2001).