



Course Specifications

Revised November 2019

Course Title:	Medical Parasitology
Course Code:	4013311-3
Program:	BSc Microbiology
Department:	Department of Biology
College:	Faculty of Applied Science – Department of Biology
Institution:	UM AL – QURA UNIVERSITY

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A. Course Identification

1. Credit hours:	3 hours
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	Level 7/ 4 th Year.
4. Pre-requisites for this course (if any):	General Biology (4011012-4)
5. Co-requisites for this course (if any):	None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	50 %
2	Blended		-
3	E-learning		-
4	Correspondence		-
5	Other	30	50 %

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	42
3	Tutorial	-
4	Practical/Field work/Internship	6
5	Others (specify)	30
	Total	102
Other Learning Hours*		
1	Study	30
2	Assignments	8
3	Library	15
4	Projects/Research Essays/Theses	10
5	Others (specify)	-
	Total	63

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course presents general concepts of parasitology, knowledge of some parasitic diseases that could be transmitted between animals and man (zoonotic diseases), knowledge about how to protect man and domestic animals from parasites and their treatment in case of infection. Basic knowledge of parasitism, the different biological inter-relationships and the host parasite relationships.

2. Course Main Objective

❖ **After completing this course student should be aware with:**

- General concept of parasitology.
- Knowledge of some parasitic diseases that could be transmitted between animals and man (Zoonotic diseases).
- Parasitology, parasitism, parasite groups.
- Relations between parasites and their hosts.
- Types of parasitism (ectoparasites, endoparasites).
- Types of hosts (definitive, intermediate and reservoir hosts).
- Scientific classification of ecto and endoparasites.
- Diagnostic, infective, nutritive and cystic stages.
- Life cycles of parasites
- Prevention, diagnosis, and epidemiology of different parasitic diseases.
- Natural and acquired immunity against parasites.
- Study unicellular parasites (sarcomastigophora, ciliophora, sporozoa).
- Study flatworms parasites (Phylum Platyhelminthes)
- Study roundworms parasites (Phylum Nematoda).
- Study acanthocephalus worms (Phylum Acanthocephala).
- Study tongueworms (Pentastomatidae).

3. Course Learning Outcomes

CLOs		Aligned-PLOs
1	Knowledge:	
1.1	<p>❖ Upon successful completion of this course The student will be able to:</p> <ul style="list-style-type: none"> • Identify parasitism, parasites and their examples. • List parasitic diseases and modes of diagnosis. • Understand host-parasite relationship. • Understand General concept of parasitology. • Aware with Knowledge of some parasitic diseases that could be transmitted between animals and man (Zoonotic diseases). • Parasitology, parasitism, parasite groups. • Understand the relations between parasites and their hosts. • List the types of parasitism (ectoparasites, endoparasites). • List the types of hosts (definitive, intermediate and reservoir hosts). • Diagnostic, infective, nutritive and cystic stages. • Draw the Life cycles of parasites • Aware with Prevention, diagnosis, and epidemiology of different parasitic diseases. • Differentiate between natural and acquired immunity against parasites. • List unicellular parasites (sarcomastigophora, ciliophora, sporozoa). • List flatworms parasites (Phylum Platyhelminthes) 	

CLOs		Aligned-PLOs
	<ul style="list-style-type: none"> List roundworms parasites (Phylum Nematoda). List acanthocephalus worms (Phylum Acanthocephala). List tongueworms (Pentastomatidae). 	
2	Skills:	
2.1	<p>Cognitive skills to be developed</p> <ul style="list-style-type: none"> ❖ Having successfully completed the course students should be able to: <ul style="list-style-type: none"> Describe the general characteristics of parasites Understand the principles and keys of parasites taxonomy Understand how parasites effect on their hosts Explain how the parasites effect their hosts Summarize parasitic diseases and modes of diagnosis. Understand host-parasite relationship. Understand the relations between parasites and their hosts. Differentiate between ecto and endoparasites. Draw the Life cycles of parasites Discuss Prevention, diagnosis, and epidemiology of different parasitic diseases. Differentiate between natural and acquired immunity against parasites. Differentiate unicellular parasites, flatworms parasites, roundworms parasites, acanthocephalus worms and tongueworms (Pentastomatidae). 	
2.2	<p>Psychomotor Skills</p> <ul style="list-style-type: none"> ❖ Upon successful completion of this course, the student is expected to be able to: <ul style="list-style-type: none"> perform the laboratory experiments precisely operate all devices in lab assemble and collect important parasites Carry out parasites identification techniques. 	
3	Competence:	
3.1	<ul style="list-style-type: none"> ❖ Upon successful completion of this course, the student is expected to be able to: <ul style="list-style-type: none"> Identification and description of parasites. Using computers and internet. Characterize methods of resistance and appropriate treatment for each disease. Conducting documentary about some parasites throughout the Kingdom. Developing oral presentations. Communicating personal ideas and thoughts. Work independently and as part of a team to finish some assignments. Communicate results of work to others. Use of needed precautions when dealing with pathogen 	

CLOs		Aligned-PLOs
	<p>microorganisms</p> <ul style="list-style-type: none"> • demonstrate professional attitudes and behaviors towards others. • propose the smart questions • understand and dissecting the problem so that it is fully solved understood. • Demonstrate the assertiveness for his decision. • Demonstrate his capability for the responsibility and Accountability • Show effective verbal communication with clarity and must be characterize with the following interpersonal attributes; (verbal communication, non-verbal communication, good listening for the others, questioning, good manners, problem solving, social awareness, self-management, responsibility and accountability). • Enhancing the ability of students to use computers and internet. • Interpret the laboratory data. • Know how to write a report. 	

C. Course Content

1 Topics to be Covered		
Topic	Weeks	Total Contact (actual) hours/week
Introduction to parasitology Definition of parasitism, selective parasitism, obligatory parasitism. Types of hosts Habitats of parasites Unicellular parasites Practical lesson Sarcodina, Brain eating amoeba, <i>Naegleria fowleri</i> , life cycle Sarcodina, <i>acanthamoeba encephalitis</i> , life cycle	1 st	5
Intestinal parasites Sarcodina, entamoeba, life cycle Practical lesson <i>Entamoeba histolytica</i> , <i>E coli</i>	2 nd	5
Intestinal flagellates <i>Giardia</i> , life cycle Practical lesson <i>Giardia lamblia</i> , <i>E coli</i>	3 rd	5
Intestinal ciliates <i>Blantidium coli</i> , life cycle First periodical test (periodical exam). Practical lesson <i>Blantidium coli</i>	4 th	5
Parasitic sporozoa Systematic classification of sporozoa <i>Toxoplasma gondii</i> , life cycle Practical lesson: <i>Toxoplasma gondii</i> , <i>Plasmodium malariae</i> , <i>Plasmodium falciparum</i> , <i>Plasmodium ovale</i>	5 th	5

Blood parasites Blood flagellates, life cycle <i>Trypanosoma gambiense</i> , <i>Trypanosoma rodesiense</i> , <i>Trypanosoma lewisi</i> , Practical lesson: <i>Trypanosoma gambiense</i> , <i>Trypanosoma rodesiense</i> , <i>Trypanosoma lewisi</i> ,	6 th	5
Blood parasites Blood flagellates, <i>Leishmania</i> , life cycle Practical lesson: <i>Leishmania</i> ,	7 th	
Midterm exam: Written exam Practical exam	8 th	5
Urogenetal flagellates <i>Trichomonas vaginalis</i> Practical lesson: <i>Trichomonas vaginalis</i>	9 th	5
Platyhelmenthes liver worms <i>Fasciola hepatica</i> , <i>Fasciola gigantica</i> , life cycle Practical lesson: W.M, <i>Fasciola hepatica</i> , <i>Fasciola gigantica</i> , TS of <i>Fasciola</i> Cercaria of <i>Fasciola hepatica</i> , <i>Fasciola gigantica</i>		5
Platyhelmenthes liver worms <i>Schistosoma mansoni</i> , <i>Schistosoma haematobium</i> , life cycle Practical lesson: W.M, male and female <i>Schistosoma mansoni</i> , and W.M, male and female <i>S. haematobium</i> , Egg, miracidia, redia and cercaria stages of <i>Schistosoma mansoni</i> , Egg, miracidia, redia and cercaria stages of <i>S. haematobium</i> ,	10 th	5
Platyhelmenthes Intestinal worms (cestods) <i>Tania saginata</i> , <i>Tania solium</i> , life cycle Practical lesson: Preserved <i>Tania</i> sp. W.M, scolex of <i>Tania saginata</i> , TS of <i>Tania</i> scolex of <i>Tania solium</i> , W.M. of immature, mature and Gravid proglottis	11 th	5
Nematods Intestinal roundworms <i>Ascaris sp.</i> , life cycle Practical lesson: Preserved ascaris sp. TS of male of <i>Ascaris</i> TS of Female of <i>Ascaris</i>	12 th	5
Nematods Intestinal roundworms <i>Ancylostoma caninum</i> , <i>Ancylostoma duodenale</i> , life cycle Practical lesson: Preserved <i>Ancylostoma caninum</i> , and <i>Ancylostoma duodenale</i> TS of <i>Ancylostoma</i>	13 th	5
Phylum Acanthocephala thorny-headed worms, or spiny-headed worms, life cycle	14 th	5

Practical lesson: Preserved spiny-headed worms TS of or spiny-headed worms		
Phylum Pentastomatidae <i>Linguatula serrata</i> , Visceral pentastomiasis in humans, life cycle Practical lesson: Adult male and female <i>Linguatula serrata</i>	15 th	
Written Final exam	16 th	
Total weeks / total actual contact hours	16 W	64

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	<ul style="list-style-type: none"> ❖ Upon successful completion of this course, the student is expected to be able to: • Understand General concept of parasitology. • Aware with Knowledge of some parasitic diseases that could be transmitted between animals and man (Zoonotic diseases). • Parasitology, parasitism, parasite groups. • Understand the relations between parasites and their hosts. • List the types of parasitism (ectoparasites, endoparasites). • List the types of hosts (definitive, intermediate and reservoir hosts). • Diagnostic, infective, nutritive and cystic stages. • Draw the Life cycles of parasites • Aware with Prevention, diagnosis, and epidemiology of different parasitic diseases. • Differentiate between natural and acquired immunity against parasites. • List unicellular parasites (sarcomastigophora, ciliophora, sporozoa). • List flatworms parasites (Phylum Platyhelminthes) • List roundworms parasites (Phylum Nematoda). • List acanthocephalus worms (Phylum Acanthocephala). • List tongueworms (Pentastomatidae). 	<ul style="list-style-type: none"> • Lectures • Take home assignment • Internet activities • Laboratory work. 	<ul style="list-style-type: none"> • Periodical exam and reports 10% • Mid- term theoretical exam 20% • Mid-term practical exam 5% • Final practical exam 15% • Final exam 50%

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	Skills		
2.1	<p>Cognitive skills to be developed</p> <p>❖ Upon successful completion of this course, the student is expected to be able to:</p> <ul style="list-style-type: none"> • Describe the general characteristics of parasites • Understand the principles and keys of parasites taxonomy • Understand how parasites effect on their hosts • Explain how the parasites effect their hosts • Summarize parasitic diseases and modes of diagnosis. • Understand host-parasite relationship. • Understand the relations between parasites and their hosts. • Differentiate between ecto and endoparasites. • Draw the Life cycles of parasites • Discuss Prevention, diagnosis, and epidemiology of different parasitic diseases. • Differentiate between natural and acquired immunity against parasites. • Differentiate unicellular parasites, flatworms parasites, roundworms parasites, acanthocephalus worms and tongueworms (Pentastomatidae). 	<ul style="list-style-type: none"> • Lectures. • Brain storming. • Discussion. 	<ul style="list-style-type: none"> • Exam must contain questions that can measure these skills. • Quiz and exams. • Discussions after the lecture.
2.2	<p>Psychomotor Skills</p> <p>❖ Upon successful completion of this course, the student is expected to be able to:</p> <ul style="list-style-type: none"> • perform the laboratory experiments precisely • operate all devices in lab • assemble and collect important parasites <p>Carry out parasites identification techniques.</p>	<p>- Follow up students the students in lab and during carryout all the laboratory experiments</p>	<p>-Giving additional marks for the students they have accurate laboratory results and good seminar presentation</p> <p>-Practical exam.</p>

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	Competence		
3.1	<ul style="list-style-type: none"> • Upon successful completion of this course, the student is expected to be able to: • Identification and description of parasites. • Using computers and internet. • Characterize methods of resistance and appropriate treatment for each disease. • Conducting documentary about some parasites throughout the Kingdom. • Developing oral presentations. • Communicating personal ideas and thoughts. • Work independently and as part of a team to finish some assignments. • Communicate results of work to others. • Use of needed precautions when dealing with pathogen microorganisms • demonstrate professional attitudes and behaviors towards others. • propose the smart questions • understand and dissecting the problem so that it is fully solved understood. • Demonstrate the assertiveness for his decision. • Demonstrate his capability for the responsibility and Accountability • show effective verbal communication with clarity and must be characterize with the following interpersonal attributes; (verbal communication, non-verbal communication, good listening for the others, questioning, good manners, problem solving, social awareness, self-management, responsibility and accountability). • Enhancing the ability of students to use computers and internet. • Interpret the laboratory data. • Know how to write a report. 	<ul style="list-style-type: none"> - Lab work - Case Study - Active learning - Small group discussion - Homework (preparing a report on some topics related to the course depending on web sites). - Seminars presentation - Practical during the carryout the experiments in the lab. 	<ul style="list-style-type: none"> - Oral exams. - Evaluate the efforts of each student in preparing the report. - Evaluate the scientific values of reports. - Evaluate the work in team - Evaluation of the role of each student in lab group assignment - Evaluation of students presentations

2. Assessment Tasks for Students

5. Schedule of Assessment Tasks for Students During the Semester

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11	--	5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
Total Marks				100%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Office hours: 10hrs.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Lecture notes prepared by faculty member responsible for the present course
Essential References Materials	<ul style="list-style-type: none"> • Schmidt, Roberts “Foundations of Parasitology” • Mehlhorn H. (2008): Encyclopedia of Parasitology. • Chiodini et al. (2001): Atlas of Medical Helminthology and Protozoology. • Roberts et al. (2004): Foundation of Parasitology.
Electronic Materials	
Other Learning Materials	<ul style="list-style-type: none"> • Microsoft Office Package.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> • Class rooms are already provided with data show • Equipped laboratories.

Item	Resources
	<ul style="list-style-type: none"> Reduce the number of students in class rooms. Find a solution for the air conditioning problem.
Technology Resources (AV, data show, Smart Board, software, etc.)	Providing class rooms with computers.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> Light microscopes. Microscopically preparations of different parasites.

G. Course Quality Evaluation

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching <ul style="list-style-type: none"> Questionnaires Open discussion in the class room at the end of the lectures.
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department <ul style="list-style-type: none"> Revision of student answer paper by another staff member. Analysis the grades of students.
3. Processes for Improvement of Teaching <ul style="list-style-type: none"> Preparing the course as PPT. Using scientific movies. Coupling the theoretical part with laboratory part Periodical revision of course content.
4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution) <ul style="list-style-type: none"> After the agreement of Department and Faculty administrations
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. <ul style="list-style-type: none"> Periodical revision by Quality Assurance Units in the Department and institution

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Prepared by faculty staff: 1. Dr. Loay Alkazmi	Signature:
Date Report Completed: November 2019	
Revised by: 1. Dr. Khaled Elbanna 2. Dr. Hussein H. Abulreesh 3. Dr. Loay Alkazmi	Signature:
Date: November 2019	
Program Chair Dr. Hussein H. Abulreesh	Signature:
Dean	Signature:
Date:	