



Course Specification of Veterinary parasitology (1)

I. Course Identification and General Information:					
1	Course Title:	Veterinary parasitology (1)			
2	Course Number & Code:	MI 354			
3	Credit hours:	C.H			
		Theoretical	Practical	Training	Seminar
		3	1	0	0
4	Study level/ semester at which this course is offered:	Third year: first semester			
5	Pre –requisite (if any):	PH242, PH243			
6	Co –requisite (if any):				
7	Program (s) in which the course is offered:	Bachelor's degree (B. Sc.) Veterinary Medicine			
8	Language of teaching the course:	English			
9	Location of teaching the course:	Faculty of veterinary medicine			
10	Prepared by:	Dr. hamid Alrefaiey			
11	Date of approval:				

II. Course description:

This course consists of theoretical and practical section is intended to familiarize the students with the essential facts and concepts of veterinary parasitology enabling them to control and prevent economical losses, parasitozoonoses. The lectures will discuss principal endo- and ectoparasites of domestic animals, which are of national or international importance to veterinary medical practice. Emphasis is placed on basic knowledge of parasite biology, epidemiology, pathogenesis, diagnosis, chemotherapy and control of parasitic infections. The purpose of the practical courses is to highlight and expand on important parasites presented in lectures, especially identification and diagnostics. At the practicals which follow the lectures

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the students become familiar with the methods of diagnosis including the interpretation of results. They observe stages of parasites in blood, faecal samples and preparation of a range of specimens.

III. Intended learning outcomes (ILOs) of the course:

(A) Knowledge and Understanding:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: **Knowledge and Understanding.**

Program Intended Learning Outcomes (Sub-PILOs) in: Knowledge and Understanding		Course Intended Learning Outcomes (CILOs) in: Knowledge and Understanding	
After completing this program, students will be able to:		After completing this course, students will be able to:	
A1-	Demonstrate a sound knowledge and understanding of concepts and principles of general culture, basic science, and that support veterinary medicine.	a1-	Define the basic terms in the fields of General and Special Parasitology.
A2-	Clarifies basic concepts, principles, and theories related to animal production, animal health and nutrition, behavior management, breeding and care that is related to animal ethical codes..	a2-	Identify deferent phyla, class, order, families, species of parasites.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Knowledge and Understanding to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Knowledge and Understanding		Teaching strategies/methods to be used	Methods of assessment
completing this course, students will be able to:		<ul style="list-style-type: none"> ▪ Lecture by data show ▪ Dialogue and discuss ▪ Practical practice ▪ self directed learning skills. ▪ Analyze the results and reach specific conclusion. ▪ Writing a review paper to 	<ul style="list-style-type: none"> ▪ Written examination ▪ Quiz ▪ Oral examination ▪ Practical examination
a1-	Define the basic terms in the fields of General and Special Parasitology.		
a2-	Identify deferent phyla, class, order, families, species of parasites.		

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		gain the skills of self-learning and presentation.	<ul style="list-style-type: none"> ▪ Activities ▪ Reports evaluation
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(B) Intellectual Skills:			
Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: Intellectual skills			
Program Intended Learning Outcomes (Sub-PILOs) in Intellectual skills		Course Intended Learning Outcomes (CILOs) of Intellectual Skills	
After completing this program, students will be able to:		After completing this course, students will be able to:	
B1	Competently practices analytical and critical thinking skills in studying and assessing health problems and reading the results of animal medical examinations that is related to sciences.	b1-	Evaluate the proper approach for Parasites and their life history.
B2-	Predicts an appropriate medical diagnosis for the most common disease states through analysis of clinical story data and the results of medical examinations of a sick animal.	b2-	Investigate reasons and sources of infection.

Teaching And Assessment Methods For Achieving Learning Outcomes:			
Alignment of Learning Outcomes of Intellectual Skills to Teaching Methods and Assessment Methods:			
Course Intended Learning Outcomes (CILOs) in Intellectual Skills.		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		<ul style="list-style-type: none"> ▪ Dialogue and discuss ▪ Lecture ▪ Practical practice ▪ Problem solving ▪ Working in groups 	<ul style="list-style-type: none"> ▪ Written examination ▪ Oral examination ▪ Practical examination ▪ Performance notice ▪ Achievement file
b1-	Evaluate the proper approach for Parasites and their life history		
b2-	Investigate reasons and sources of infection.		

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		<ul style="list-style-type: none"> ▪ Labor training ▪ Researches and projects 	<ul style="list-style-type: none"> ▪ Reports evaluation ▪ Proposal evaluation
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(C) Professional and Practical Skills:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: **Professional and Practical Skills**

Program Intended Learning Outcomes (Sub-PILOs) in Professional and Practical Skills		Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills	
After completing this program, students will be able to:		After completing this course, students will be able to:	
C2-	Practices practical, diagnostic, clinical and research skills, including the collection of samples in various fields of veterinary medicine and related sciences, in a safe and effective manner, considering the ethics of the profession.	c1-	Practice of preparation of samples of parasites.
C3-	Reads the results of laboratory investigations and diagnostic scans and writes reports and prescriptions for all common cases in a proper way.	c2-	Evaluate of examination of samples for parasitic infection by different methods

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Professional and Practical Skills to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:			
c1-	Practice of preparation of samples of parasites.	-Practical practice	- Written examinations
		-Problem solving	- Oral examinations
		-Working in groups	- Practical examination
c2-	Evaluate of examination of samples for parasitic infection by different methods	-Collaborative learning	- Performance notice
			- Achievement file

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			- Reports evaluation - Proposal evaluation
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(D) General / Transferable Skills:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: **General and Transferable skills**

Program Intended Learning Outcomes (PILOs) in General / Transferable skills		Course Intended Learning Outcomes (CILOs) in General / Transferable skills	
After completing this program, students will be able to:		After completing this course, students will be able to:	
D1-	Communicates effectively with Professional colleagues and animal owners and expresses his ideas clearly and objectively.	d1-	Communicate effectively with animal's owners using appropriate communication skills.
D4-	Works in normal conditions, crises and epidemics, alone and effectively within a medical team.	d2-	Search the web for a given course topic to build up a review.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of General and Transferable skills to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in General and Transferable Skills		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		<ul style="list-style-type: none"> ▪ Dialogue and discuss ▪ Working in groups ▪ Scientific visits ▪ Researches and projects ▪ Self learning Problem solving 	<ul style="list-style-type: none"> ▪ Achievement file ▪ Reports evaluation ▪ Proposal evaluation ▪ Performance notice Practical examinations
d1-	Communicate effectively with animal's owners using appropriate communication skills.		
d2-	Search the web for a given course topic to build up a review.		

IV. Course Content:

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1 – Course Topics/Items:					
a – Theoretical Aspect					
Order	Topic List / Units	CILOs (symbols)	Sub-topic List	Number of weeks	Contact hours
1	Introduction of parasitology Phylum:Platyhelmenthes; class; Trematoda	a1,a2,b1,b2,c1,c2	Definition, classification, parasites and parasitits Platyhelmenthes: Classification Order: Digenea: Classification , Morphology, Development of Trematoda	1	2
2	Family: Fasciolidae Family: Dicrocoeliidae, Family:Heterophyiidae	a1,a2,b1,b2,c1,c2	Genus : Fasciola Genus:Dicrocoelium, Genus: Heterophyes	2	2
3	Family: Echinostomatidae Family: Schistosomatidae	a1,a2,b1,b2,c1,c2	Genus: Echinochasmus, Genus: Echinostomum Genus: Paramphistomum Genus: Cotylophron, Genus: Carmyerius Genus: Gastrodiscus	3	2
4	Class: Cestoidea; Subclass: Colyloda; Family: Diphylobothridae Family: Bothriocephalidae Subclass Eucestoda; Family: Taeniidae Family: Dilepididae Family: Hymenolepididae	a1,a2,b1,b2,c1,c2	Classification and Morphology, Development of Cestodes Genus: Diphylobothrium Genus: Spirometra Genus: Polyonchobothrium Genus: Bothriocephalus Genus: Taenia Genus: Echinococcus Genus: Dipylidium Genus: Hymenolepis	4	2
5	Family: Anoplocephalidae	a1,a2,b1,b2,c1,c2	Genus: Anoplocephala	5	2

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	<p>Family: Thysanosomidae</p> <p>Family: Davainiidae</p> <p>Family: Proteocephalidae</p>		<p>Genus: Paranoplocephala</p> <p>Genus: Moneizia</p> <p>Genus: Avitellina</p> <p>Genus: Stilesia</p> <p>Genus: Davainea</p> <p>Genus: Railliatina</p> <p>Genus: Cotugnia</p> <p>Genus: Proteocephalus</p>		
6	<p>Family: Caryophyllidae</p> <p>Phylum: Nematelminthes</p> <p>Subclass: Phasimida: order : Ascarididia</p> <p>Superfamily: Ascarididea;</p> <p>Family: Ascaridae</p>	a1,a2,b1,b2,c1,c2	<p>Genus: Caryophylleus</p> <p>Genus: Wynionia</p> <p>Class: Nematoda</p> <p>:Morphology and development of Nematodes</p> <p>Genus: Ascaris</p> <p>Genus: Parascaris</p> <p>Genus: Toxascaris</p>	6	2
7	<p>Family: Anisakidae</p> <p>Family: Ascarididae</p> <p>Superfamily: Heterakoidea</p> <p>Family: Heterakoidae</p> <p>Superfamily: Oxyuroidea</p> <p>Family: Oxyuridae</p>	a1,a2,b1,b2,c1,c2	<p>Genus: Toxocara</p> <p>Genus: Anisakis</p> <p>Genus: Ascaridia</p> <p>Genus: Heterakis</p> <p>Genus: Oxyuris</p> <p>Genus: Entrobisus</p> <p>Genus: Passalurus</p> <p>Genus : Sublura</p>	7	2

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8	Superfamily: Rhabditoidea Family: Rhabditidae Family: Strongyloididae Order: Strongylida Superfamily: Ancylostomatida Family: Ancylostomatidae Superfamily: Trichostrongylidae Family: Trichostrongylidae	a1,a2,b1,b2,c1,c2	Genus : strongyloides Genus: Ancylostoma Genus: Bunostomum Genus : Necator Genus: Haemonchus Genus: Ostertagia Genus: Nematodirus	8	2
9	Family :Dictycaulidae Superfamily: Strongyloidea Family: Strongylidae Family: Trichonematidae Family: Chabertidae	a1,a2,b1,b2,c1,c2	Genus: Dictycaulus Genus: Strongylus Genus: Triodontophorus Genus: Trichonema Genus: Oesophagostomum Genus: Chabertia	9	2
10	Family: Syngamidae Family:Amidostomatidae Superfamily: Metastrongylidea Family: Metastrongylidae	a1,a2,b1,b2,c1,c2	Genus: Syngamus Genus: Amidostoma Genus: Metastrongylus Genus: Meullreius Genus: Protostrongylus	10	2
11	Order:Spirurida Superfamily: spirurtoidea Family: Spiruridae Family: Camallanidae Family: Cucllanidae Family: Acuaridae Family: Tetrameridae	a1,a2,b1,b2,c1,c2	Genus: Habronema Genus: Spirocerca Genus: Paracamellanus Genus:Camallanus Genus: Cuculanus	11	2

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12	Superfamily: Filaroidea Superfamily: Dracunculoidea Subclass: Aphasmoda	a1,a2,b1,b2,c1,c2	Family: Filaridae Family: Setaridae Family: Onchocercidae Family: Dracunculidae order: Enoplida Superfamily: Trichuriodea Family: Trichinillidae Family: Trichuridae	12	2
13	Fish parasites: Phylum: Annelida Class: Hirudinea (leeches) Family: Psicolidae Phylum: Acanthocephala Family: Acanthostomidae Family: Allocreadida	a1,a2,b1,b2,c1,c2	Genus: Psicolida Genus: Hemichepsis Genus: Cystobrunchialis Genus: Acanthosentis Genus: Acanthocephalans Genus: Acanthostomum Genus: Orientocreadium	13	2
14	Family: Paramphistomatidae Order: Monogenea Family: Dactylogyridae Family: Gyrodactylidae Encysted metacercariae infecte fish	a1,a2,b1,b2,c1,c2	Genus: Sandonia sudanesis Genus: Deropristis mllaid Genus: Dactylogyrus Genus: Gyrodactylus spot disease, yellow grup disease.	14	2
Number of Weeks /and Units Per Semester				14	28

b- Training Aspect:

Order	Training Tasks	CILOs (symbols)	Number of weeks	Contact hours
1	Laboratory procedures in helminthology - Examination of faeces, Macroscopic examination, Direct examination of faecal sample, Concentration methods, Sedimentation technique	a1,a2,b1,b2,c1,c2	1	2

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	Floataction technique, Laboratory reagents and solutions			
2	<ul style="list-style-type: none"> - Collection and processing and identification of helminth parasite (Trematodes, Cestodes and Nematodes) - examination of faecal sample, Collection of helminths: - Fixation; Common fixatives , Preservation: Kaiserling's preservative -Staining, processing, permanent mounting and identification of trematode and cestode parasites -Flattening / Stretching -Staining solutions for trematodes and cestodes -stain Procedure for immediate examination of cestodes -Meggit's rapid staining technique for cestodes. -Processing and identification of nematode parasites -Stepwise procedure for clearing of nematodes 	a1,a2,b1,b2,c1,c2	1	2
3	<ul style="list-style-type: none"> -Common flotation solutions -Preservatives -Fixatives for trematodes and cestodes -Commonly used stains for trematodes and cestodes 	a1,a2,b1,b2,c1,c2	1	2
4	Classification, -dentification of trematode parasite eggs	a1,a2,b1,b2,c1,c2	1	2
5	-Fasciola spp. (Composite egg)	a1,a2,b1,b2,c1,c2	1	2
6	<ul style="list-style-type: none"> -Larval stages of trematode parasite - Eggs of trematode parasites 	a1,a2,b1,b2,c1,c2	1	2
7	<ul style="list-style-type: none"> -Adult stages of trematodes - Schistosomes 	a1,a2,b1,b2,c1,c2	1	2
8	<p>Identification of cestode parasites:</p> <ul style="list-style-type: none"> Identification of cestode parasites Eggs of cestode parasites 	a1,a2,b1,b2,c1,c2	1	2
9	<ul style="list-style-type: none"> -Larval stages of cestodes -Adult stages of cestodes 	a1,a2,b1,b2,c1,c2	1	2

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	Ruminant cestode: Monezia expansa, Moniezia benedeni, Avitellina lahorea, Thysaniezia giardi Stilesia globipunctata			
10	Equine tapeworms: Anoplocephala perfoliata, Anoplocephala magna, Paranoplocephala mamillana Human tapeworms: Taenia spp	a1,a2,b1,b2,c1,c2	1	2
11	Poultry cestodes Davainea proglottina, Raillietina sp, Raillietina tetragona, Raillietina echinobothrida, Raillietina cesticillus, Cotugnia digonopora, Choanotaenia infundibulum, Amoebotaenia sphenoides	a1,a2,b1,b2,c1,c2	1	2
12	Canine tapeworms Dipylidium caninum, Taenia multiceps, Echinococcus granulosus Diphyllobothrium latum	a1,a2,b1,b2,c1,c2	1	2
13	-Identification of nematode eggs - Larval stages of nematodes - Bovine nematodes Toxocara vitulorum, Strongyloides spp, Oesophagostomum radiatum Bunostomum trigenocephalum, Haemonchus contortus, Mecistocirrus digitatus Trichostrongylus axei, Cooperia curticei, Ostertagia circumcincta, Nematodirus spathiger, Dictyocaulus viviparous, Thelazia rhodesii, Setaria digitate, Stephanofilaria assamensis, Microfilaria	a1,a2,b1,b2,c1,c2	1	2
14	-Equine nematodes: Parascaris equorum, Oxyuris equi, Strongylus vulgaris -Canine nematodes: -Ovine nematodes Chabertia ovina, Bunostomum phlebotomum,	a1,a2,b1,b2,c1,c2	1	2

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	<p>Oesophagostomum columbianum, Dictyocaulus filaria, Muellerius capillaris</p> <p>-Poultry nematodes Ascaridia galli, Heterakis gallinae, Subulura brumpti, Syngamus trachea</p> <p>-Human nematodes Dracunculus medinensis</p> <p>- Identification of acanthocephala</p>			
Number of Weeks /and Units Per Semester			14	28

V. Teaching strategies of the course:

- Lectures depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- Training in the laboratory
- Self-learning (Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library).
- Summer training course.
- Assays and reviews.
- Discussion groups.
- Group work
- Problem Solving
- Assignments
- Brainstorming
- Log book
- Field visit

3-Assessment Methods:

- Written examination: For assessment of knowledge, back calling and Intellectual skills.
 - Practical examination: For assessment of practical and professional skill.
 - Oral examination: For assessment of knowledge and Intellectual skills.
- Student activities: For assessment of knowledge and general and transferable skills.

VI. Schedule of Assessment Tasks for Students During the Semester:

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No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes (CILOs symbols)
1	Participation, quizzes and assignments	2-14	10	10%	a1,a2,b1,b2,c1,c2
2	Mid-Term Exam	8	10	10%	a1,a2,b1,b2,c1,c2
3	Mid-Term Practical Exam	8	10	10%	a1,a2,b1,b2,c1,c2
4	Final Practical Exam	13	10	10%	a1,a2,b1,b2,c1,c2
5	Oral Exam	13	5	5%	a1,a2,b1,b2,c1,c2
6	Final Exam	16	55	55%	a1,a2,b1,b2,c1,c2
Total			100	100%	

VII. Students' Support:

Office Hours/week	Other Procedures (if any)
From Saturday to Wednesday at 8:00 a.m. till 2 p.m.	Student can contact with me via e-mail

VIII. Learning Resource (MLA style or APA style)s:

1- Required Textbook(s) (maximum two)

- Wall, R. and Shearer, D. (1997): Veterinary entomology. Published by chapman & hall, 2-6 boundary rows, London SE HN, UK.
- Hendrix CH.M. (1998): diagnostic veterinary parasitology (1998) by mosby Inc.

2- Recommended Readings and Reference Materials

- 1- Veterinary Helminthology by Angus M.Dunn
- 2-Parasitology of Veterinarians by Jay George
- 3- Heminthes, Arthropods and Porotozoa Domesticated Animals by J.L. Soulsby.
- 4- Diagnostic Veterinary Parasitology by Charles M. Hendrix

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	5-Notes Book for students Veterinary Parasitology.
3- Essential References	
	<p>-Abyladze, k. E. et al. (1990) : parasitology and infections disease, agriculturals animals . Mir publi Moscow, ussR in Russian.</p> <p>- Geffrey, H. C. et al. (1991) : Atlas of medical helminthology and protozoology . Churchill livingston New York .</p> <p>- Georgi, J. R.; Georgi, N. E. (1990) : parasitology for veterinarians, . 5 Ed., Philadelphia, London .</p> <p>- Kassai, T. (1999) : Vet. Helminthology butterwoth – Heinemann .</p> <p>- Mehlhorn, H.; Duwel, D.; und raether, W. (1993) : Diagnose und Therapie der Parasiten von Haus Nutz-und Heimtieren . gustav fischer verlag Stuttgart .</p> <p>- Maff Adas (1986) : Manual of veterinary parasitological laboratory technigues . 3. Ed reference 4 HMSO, London.</p> <p>- Soulsby, E. J. L. (1986) : Helminths, arthropods and protozoa of domesticated animals 7. Ed. Bail tindall, London .</p>
4- Electronic Materials and Web Sites etc.	
	<p><u>Scientific Journals</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> The journal of parasitology <input type="checkbox"/> The journal of veterinary medical science. <input type="checkbox"/> The journal of Veterinary parasitol. <input type="checkbox"/> Korean journal of parasitology. <p><u>Scientific websites</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> http://www.cdc.org <input type="checkbox"/> http://www.pubmed.org/ <input type="checkbox"/> http://www.sciencedirect.com/
5- Other Learning Material:	
	-

X. Course Policies:	
1	Class Attendance: MANDATORY TO ATTEND ALL COURSE LECTURES
2	Tardy:

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	Not allowed at all. Students must be in class 10 minutes prior to the beginning of lectures.
3	Exam Attendance/Punctuality: Attendance is mandatory; absence is accepted with valid excuse.
4	Assignments & Projects: All assignments and projects are to be submitted on their due date. Any assignment turned in after the due date will not be accepted without valid and reasonable excuse.
5	Cheating: Not tolerated and may lead to EXPELLING the student from the program
6	Plagiarism: Not tolerated AT ALL and may lead to EXPELLING the student from the program
7	Other policies: <ol style="list-style-type: none"> 1. All devices must be on silent or at least on vibration during lectures/labs. 2. Before any exam (written, practical, oral) student's identity will be checked (student's card, ID, passport). Without any of these documents, the student will not be allowed in the exam room. 3. Any of type/ form of cheating is not allowed no matter what. 4. Maintain silence during lectures and disturbance is not allowed.

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Course Plan of Veterinary parasitology (1)

X. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Hamid A. N. Alrefaiey	Office Hours					
Location & Telephone No.	Sana'a mobile 775336921	SAT	SUN	MON	TUE	WED	THU
E-mail	Hamid77Ali@gmail.com nagihamidali@gmail.com	8am 2pm	8am 2pm	8am 2pm	8am 2pm	8am 2pm	-

XI. Course Identification and General Information:						
1-	Course Title:	Veterinary parasitology (1)				
2-	Course Number & Code:	MI 354				
3-	Credit hours:	C.H				Total
		Th.	Seminar	Pr.	F. Tr.	
		3	-	1		4
4-	Study level/year at which this course is offered:	Third year: first semester				
5-	Pre –requisite (if any):	PH242, PH243				
6-	Co –requisite (if any):	None				
7-	Program (s) in which the course is offered	Bachelor's degree (B. Sc.) Veterinary Medicine				
8-	Language of teaching the course:	English				
9-	System of Study:	Regular / Semester				
10-	Mode of delivery:	Lectures and Practical				
11-	Location of teaching the course:	Faculty of veterinary medicine				

II. Course Description:
This course consists of theoretical and practical section is intended to familiarize the students with the

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essential facts and concepts of veterinary parasitology enabling them to control and prevent economical losses, parasitozoonoses. The lectures will discuss principal endo- and ectoparasites of domestic animals, which are of national or international importance to veterinary medical practice. Emphasis is placed on basic knowledge of parasite biology, epidemiology, pathogenesis, diagnosis, chemotherapy and control of parasitic infections. The purpose of the practical courses is to highlight and expand on important parasites presented in lectures, especially identification and diagnostics. At the practicals which follow the lectures the students become familiar with the methods of diagnosis including the interpretation of results. They observe stages of parasites in blood, faecal samples and preparation of a range of specimens.

I. Intended learning outcomes (ILOs) of the course:

After completing this course, students will be able to:

- a1- Define the basic terms in the fields of General and Special Parasitology.
- a2- Identify deferent phyla, class, order, families, species of parasites.
- b1- Evaluate the proper approach for Parasites and their life history
- b2- Investigate reasons and sources of infection.
- c1- Practice of preparation of samples of parasites.
- c2- Evaluate of examination of samples for parasitic infection by different methods
- d1- Communicate effectively with animal's owners using appropriate communication skills.
- d2- Search the web for a given course topic to build up a review.

II. Course Content:

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Introduction of parasitology Phylum:Platyhelmenthes; class; Trematoda	1	2
2	Family: Fasciolidae Family: Dicrocoeliidae, Family:Heterophyiidae	2	2
3	Family: Echinostomatidae	3	2

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	Family: Schistosomatidae		
4	Class: Cestoidea; Subclass: Colyloda; Family: Diphylobothridae Family: Bothriocephalidae Subclass Eucestoda; Family: Taeniidae, Family: Dilepididae, Family: Hymenolepididae	4	2
5	Family: Anoplocephalidae, Family: Thysanosomidae, Family: Davainiidae, Family: Proteocephalidae	5	2
6	Family: Caryophyllidae Phylum: Nematelminthes Subclass: Phasimida: order : Ascarididi Superfamily: Ascarididea; Family: Ascaridae	6	2
7	Family: Anisakidae Family: Ascarididae Superfamily: Heterakoidea Family: Heterakoidae Superfamily: Oxyuroidea Family: Oxyuridae	7	2
8	Mid exam	8	2
9	Superfamily: Rhabditoidea Family: Rhabditidae Family: Strongyloididae Order: Strongylida Superfamily: Ancylostomatidea Family: Ancylostomatidae Superfamily: Trichostrongylidae Family: Trichostrongylidae	9	2
10	Family :Dictycaulidae Superfamily: Strongyloidea Family: Strongylidae Family: Trichonematidae, Family: Chabertidae	10	2
11	Family: Syngamidae, Family: Amidostomatidae Superfamily: Metastrongylidea Family: Metastrongylidae	11	2
12	Order: Spirurida Superfamily: spirurtoidea Family: Spiruridae, Family: Camallanidae	12	2

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	Family: Cucllanidae, Family: Acuaridae Family: Tetrameridae		
13	Superfamily: Filarioidea Superfamily: Dracunculoidea Subclass: Aphasmida	13	2
14	Fish parasites: Phylum: Annelida Class: Hirudinea (leeches) , Family: Psicolidae Phylum: Acanthocephala, Family: Acanthostomidae Family: Allocreadida	14	2
15	Family: Paramphistomatidae Order: Monogenea: Family: Dactylogyridae Family: Gyrodactylidae Encysted metacercariae infecte fish	15	2
16	Final exam	16	2
Number of Weeks /and Units Per Semester		16	32

b- Training Aspect:

Order	Training Tasks	Week Due	Contact hours
1	Laboratory procedures in helminthology - Examination of faeces, Macroscopic examination, Direct examination of faecal sample, Concentration methods, Sedimentation technique Floatation technique, Laboratory reagents and solutions	1	2
2	- Collection and processing and identification of helminth parasite (Trematodes, Cestodes and Nematodes) - examination of faecal sample, Collection of helminths: - Fixation; Common fixatives , Preservation: Kaiserling's preservative -Staining, processing, permanent mounting and identification of trematode and cestode parasites -Flattening / Stretching -Staining solutions for trematodes and cestodes -stain Procedure for immediate examination of cestodes -Meggit's rapid staining technique for cestodes. -Processing and identification of nematode parasites -Stepwise procedure for clearing of nematodes	2	2

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3	-Common flotation solutions -Preservatives -Fixatives for trematodes and cestodes -Commonly used stains for trematodes and cestodes	3	2
4	Classification, -dentification of trematode parasite eggs	4	2
5	-Fasciola spp. (Composite egg)	5	2
6	-Larval stages of trematode parasite - Eggs of trematode parasites	6	2
7	- Adult stages of trematodes - Schistosomes	7	2
8	Mid exam	8	2
9	Identification of cestode parasites: Identification of cestode parasites Eggs of cestode parasites	9	2
10	- Larval stages of cestodes - Adult stages of cestodes Ruminant cestode: Monezia expansa, Moniezia benedeni, Avitellina lahorea, Thysaniezia giardi Stilesia globipunctata	10	2
11	Equine tapeworms: Anoplocephala perfoliata, Anoplocephala magna, Paranoplocephala mamillana Human tapeworms: Taenia spp	11	2
12	Poultry cestodes Davainea proglottina, Raillietina sp, Raillietina tetragona, Raillietina echinobothrida, Raillietina cesticillus, Cotugnia digonopora, Choanotaenia infundibulum, Amoebotaenia sphenoides	12	2
13	Canine tapeworms Dipylidium caninum, Taenia multiceps, Echinococcus granulosus Diphyllobothrium latum	13	2
14	- Identification of nematode eggs - Larval stages of nematodes - Bovine nematodes	14	2

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	Toxocara vitulorum, Strongyloides spp, Oesophagostomum radiatum Bunostomum trigonocephalum, Haemonchus contortus, Mecistocirrus digitatus Trichostrongylus axei, Cooperia curticei, Ostertagia circumcincta, Nematodirus spathiger, Dictyocaulus viviparous, Thelazia rhodesii, Setaria digitate, Stephanofilaria assamensis, Microfilaria		
15	<p>-Equine nematodes: Parascaris equorum, Oxyuris equi, Strongylus vulgaris</p> <p>-Canine nematodes:</p> <p>-Ovine nematodes Chabertia ovina, Bunostomum phlebotomum, Oesophagostomum columbianum, Dictyocaulus filaria, Muellerius capillaris</p> <p>-Poultry nematodes Ascaridia galli, Heterakis gallinae, Subulura brumpti, Syngamus trachea</p> <p>-Human nematodes Dracunculus medinensis</p> <p>- Identification of acanthocephala</p>	15	2
16	Final exam	16	2
Number of Weeks /and Units Per Semester		16	32

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III. Teaching strategies of the course:

- Lectures depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- Training in the laboratory
- Self-learning (Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library).
- Summer training course.
- Assays and reviews.
- Discussion groups.
- Group work
- Problem Solving
- Assignments
- Brainstorming
- Log book
- Field visits.

IV. Assessment Methods:

- Written exam
- Practical exam
- Oral exam
- Quizzes
- Report assignments
- Discussion.

No.	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Participation, quizzes and assignments	2-14	10	10%
2	Mid-Term Exam	8	10	10%
3	Mid-Term Practical Exam	8	10	10%
4	Final Practical Exam	13	10	10%
5	Oral Exam	13	5	5%
6	Final Exam	16	55	55%

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	Total	100	100%
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V. Learning Resources:

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1- Required Textbook(s) (maximum two).

- Wall, R. and Shearer, D. (1997): Veterinary entomology. Published by Chapman & Hall, 2-6 Boundary Row, London SE 18 2PB, UK.
- Hendrix CH.M. (1998): diagnostic veterinary parasitology (1998) by Mosby Inc.

2- Essential References.

- Abyladze, K. E. et al. (1990) : parasitology and infectious diseases, agricultural animals . Mir publisher Moscow, USSR in Russian.
- Geoffrey, H. C. et al. (1991) : Atlas of medical helminthology and protozoology . Churchill Livingstone New York .
- Georgi, J. R.; Georgi, N. E. (1990) : parasitology for veterinarians, . 5 Ed., Philadelphia, London .
- Kassai, T. (1999) : Vet. Helminthology Butterworth – Heinemann .
- Mehlhorn, H.; Duwel, D.; and Raether, W. (1993) : Diagnose und Therapie der Parasiten von Haus- und Heimtieren . Gustav Fischer Verlag Stuttgart .
- Maff Adas (1986) : Manual of veterinary parasitological laboratory techniques . 3. Ed reference 418 HMSO, London.
- Soulsby, E. J. L. (1986) : Helminths, arthropods and protozoa of domesticated animals 7. Ed. Baillière Tindall, London .

3- Electronic Materials and Web Sites etc.

Scientific Journals

- The journal of parasitology
- The journal of veterinary medical science.
- The journal of Veterinary parasitology.
- Korean journal of parasitology.

Scientific websites

- <http://www.cdc.org>
- <http://www.pubmed.org/>
- <http://www.sciencedirect.com/>

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XI. Course Policies:	
1	Class Attendance: MANDATORY TO ATTEND ALL COURSE LECTURES
2	Tardy: Not allowed at all. Students must be in class 10 minutes prior to the beginning of lectures.
3	Exam Attendance/Punctuality: Attendance is mandatory; absence is accepted with valid excuse.
4	Assignments & Projects: All assignments and projects are to be submitted on their due date. Any assignment turned in after the due date will not be accepted without valid and reasonable excuse.
5	Cheating: Not tolerated and may lead to EXPELLING the student from the program
6	Plagiarism: Not tolerated AT ALL and may lead to EXPELLING the student from the program
7	Other policies: <ol style="list-style-type: none"> 1- All devices must be on silent or at least on vibration during lectures/labs. 2- Before any exam (written, practical, oral) student's identity will be checked (student's card, ID, passport). Without any of these documents, the student will not be allowed in the exam room. 3- Any of type/ form of cheating is not allowed no matter what. 4- Maintain silence during lectures and disturbance is not allowed.

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