

Module title:	Parasitology and Invasiology 1	ECTS	4
Polish translation:	Parazytologia i Inwazjologia		
Course:	Veterinary Medicine		

Module language: English		Stage: JM-FVM	
Form of studies: <input checked="" type="checkbox"/> intramural <input type="checkbox"/> extramural	Type of module: <input type="checkbox"/> basic <input checked="" type="checkbox"/> directional <input checked="" type="checkbox"/> mandatory <input type="checkbox"/> elective	Semester: 4	<input type="checkbox"/> winter semester <input checked="" type="checkbox"/> summer semester
Academic year: 2022/2023		Catalogue number:	FVM-V-JMSS-04S-D55_20

Module coordinator:	Dr Maciej Klockiewicz (DVM, PhD)
Teachers responsible for the module:	Academic teachers of the Institute of Veterinary Medicine; Department of Pre-Clinical Sciences; PhD students in accordance to the internal legal acts; visiting professors; other specialists in the field of study
Objectives of the module:	<p>Student acquires knowledge concerning General Parasitology and Invasiology, e.g.: parasite, parasitism, parasite life cycle, parasitic infection / parasitic diseases of veterinary importance. The course covers bases of epidemiology, host-parasite relations, symptoms of parasitic infections, clinical and laboratory diagnostics of infections, control and preventive measurements of parasitic diseases. Zoonotic aspects of parasite infections are presented and discussed.</p> <p><u>Topics of lectures</u> - [2h]: I-II. Definition and types of parasitism. Relations among hosts and parasites. Occurrence of parasites in animals. Adaptations to parasitism. Main ways of parasite infections and parasite attitudes that allow establishment of infection in the host.</p> <p>III-IV. Characteristics of protozoans of Sarcostigophora – parasitizing in the intestine and reproductive tract of animals (<i>Giardia</i> spp., <i>Histomonas</i> sp., <i>Trichomonas</i> spp., <i>Entamoeba</i> spp.).</p> <p>V-VIII. Characteristics of protozoans of Sarcostigophora & Apicomplexa - parasitizing in blood (<i>Trypanosoma</i> sp., <i>Leishmania</i> sp., <i>Babesia</i> sp., <i>Theileria</i> sp., <i>Plasmodium</i> sp.).</p> <p>IX-X. Biology of trematodes. Role of tegument in fluke pathogenicity. Characteristics of Fasciolidae, Dicrocoelidae and Paramphistomatidae flukes. Carcinogenesis and fluke infections – considerations in animals and humans.</p> <p>XI-XII. Epidemiology, immunobiology and pathology of Schistosomatidae, Opisthorchidae, Protsthogonimidae, Diplostomatidae flukes – review of infections in animals and humans.</p> <p>XIII-XIV. Cestodes – biology, role of tegument in pathogenicity. Epidemiology and immunobiology of Taenidae tapeworms in intermediate and definitive hosts. Zoonoses caused by tapeworms: cysticercosis, hydatid and alveolar echinococcosis.</p> <p>XV-XVI. Epidemiology, Immunobiology and pathology due to tapeworm infection of Anoplocephalidae, Hymenolepididae, Davaneidae and Dipledididae – parasitizing in birds and mammals.</p> <p>XVII-XVIII. Nematodes – biology, morphology, occurrence in nature. Importance of parasitic nematodes in human and veterinary medicine – a review. <i>Caenorhabditis elegans</i> – a nematode used in experimental parasitology.</p> <p>XIX-XX. Role of Ancylostomatoidea (hookworms) and Strongyloidea (threadworms) in humans and animals.</p> <p>XXI-XXII. Trichostrongylidae infections in cattle and small ruminants. Phenomena found during development of gastrointestinal nematode: arrested larvae, spring rise, self-cure.</p> <p>XXIII-XXIV. Nematodes parasitizing in respiratory tract of poultry, ruminants, pigs, wild boars, and carnivores: Syngamidae, Metastrongylidae, Protostrongylidae. Characteristics of <i>Angiostrongylus vasorum</i> infection.</p> <p>XXV-XXVI. Infections caused by roundworms and pinworms I farm and companion animals. Pathology and immunobiology of Ascaroididae and Anisakidae.</p> <p>XXVII-XXVIII. Prevalence and immunobiology of nematode infections caused by Spiruroidea (<i>Spirocerca</i> sp., <i>Habronema</i> sp., <i>Draschia</i> sp., <i>Thelazia</i> sp., <i>Gongylonema</i> sp.) and Filarioidea (<i>Dirofilaria</i> sp., <i>Setaria</i> sp., <i>Onchocerca</i> sp.). The perspectives of skin and heart dirofilariosis control in Poland and Europe.</p> <p>XXIX-XX. Prevalence and immunobiology of nematode infections caused by Trichuroidea (<i>Capillaria</i> sp., <i>Trichinella</i> spp., <i>Trichuris</i> sp.) in farm and companion animals. Epidemiological and clinical concerns of trichinosis in animals and humans.</p> <p>Note: Description of some nematode infection – here only during lectures – it will be continued in the next semester (5).</p> <p><u>Topics of classes:</u></p> <ul style="list-style-type: none"> - Rules and methods concerning detection of parasitic infections in farm and companion animals [3 h] - Serological and molecular methods applied in parasitological diagnostics - Infections of Sarcostigophora in farm, companion animals and humans – p. 1 & 2 [4h] - Infections caused by protozoans parasitizing in blood (<i>Babesia</i> spp. in cattle and dogs, <i>Hepatozoon</i> spp., <i>Leishmania</i> spp., [2h]) - Infections caused by intestinal coccidia in pigs and carnivores (<i>Eimeria</i> spp., <i>Isospora</i> spp.). Specificity of <i>Neospora caninum</i>, and <i>Toxoplasma gondii</i> infections. [3h] - Intestinal coccidiosis in poultry, calves, rabbits and foals (<i>Eimeria</i> spp., <i>Cryptosporidium</i> spp., <i>E. truncata</i>, etc.). [2h] - Diagnostics of protozoan infection in animals – laboratory diagnostics – practical training. [2h] - Diagnostics and control of fluke infections in large and small ruminants: <i>F. hepatica</i>, <i>P. cervi</i>, <i>D. dendriticum</i>. [2 godz.] - Diagnostics and control of trematode infections in poultry and carnivores: <i>Prosthogonimus</i> sp., Echinostomatidae, <i>Alaria alata</i>, <i>Opisthorchis felineus</i>. [2h] - Infections of <i>D. latum</i>, <i>T. saginata</i>, <i>T. solium</i>, <i>Hymenolepis</i> sp. – epidemiology and control. [2h] - Diagnostics and control of tapeworms in carnivores: <i>Echinococcus</i> spp., <i>D. caninum</i>, <i>M. lineatus</i>, <i>T. pisiformis</i>, etc. [2h] - Diagnostics and control of tapeworms in cattle, horses and poultry: Anoplocephalidae, <i>Drepanidotaenia</i> sp., <i>Fimbriaria</i> sp., etc. [2h] - Diagnostics of trematode and cestode infections in animals – laboratory diagnostics – practical training. [2h]

Teaching forms, number of hours:	a) Lectures; hours - 30; b) Laboratory classes; hours - 30; c) Seminars; hours ...; d) Clinical laboratories; hours ...; e) Field exercises; hours ...;			
Teaching methods:	... Detailed schedule will be defined by the coordinator of the course at the beginning of semester. Detailed organization of consultations will be defined by the coordinator of the course at the beginning of semester.			
Formal prerequisites and initial requirements:				
Learning effects	Course outcomes:	Learning outcomes relative to the course outcomes	Impact on the course outcomes*	
Knowledge:	1	Students knows characteristics of parasite species, their life cycles and hosts	A.W.13	3
			A.W.20	2
			A.W.1, A.W.2, A.W.4	1
	2	Student knows the consequences of the parasite infections (incl. zoonotic potency infections) in animals and humans	A.W.13, B.W.10	3
			A.W.11, A.W.12	2
			A.W.10, B.W.1, B.W.2, B.W.3, B.W.4, B.W.8, B.W.9	1
	3	Students knows antiparasitic compounds (drugs) and rules concerning their use in the control of parasite infection in animals	A.W.17, A.W.18	3
			A.W.16, B.U.13	2
			A.W.21	1
Skills:	1	Student is able to recognise clinical symptoms of parasitic infections	A.U.4.	3
			B.U.2, B.U.3	2
			B.U.3, B.U.5, B.U.16	1
	2	Student is able to recognise pathological lesions caused by parasite in affected host	B.W.10	3
			A.U.13	2
			B.U.25	1
	3	Student is able to choose the adequate diagnostic method(s) to detect parasitic infection	B.U.6, B.U.13	3
			A.U.12, A.U.13, B.U.2	2
			A.U.21, A.U.23, B.U.16, B.U.22	1
Competences:	1	Student is ready to use knowledge to set up the optimal control method of parasitic infections	KS.4	3
			KS.7, KS.8, KS.9	2
			KS.5	1
	2	Student is able to communicate with owner using proper language and terms to discuss the infection's issues	KS.1, KS.9	3
			KS.7, KS.11	2
KS.2	1			
Objectives of the module required to obtain learning effects:	Introduction to basic definitions concerning General and Veterinary Parasitology. Meaning of terms: parasite, host and parasitism. Parasite life cycle – importance in Veterinary medicine. Definitions of final, intermediate and paratenic hosts. Epidemiological description of infection: intensity, prevalence, etc. Detection significance of invasive forms, ways of infection of endo- and ectoparasites in farm and companion animals. Impact of parasitic diseases on animal health and productivity. Presentation of parasitic diseases in the context of Veterinary Public Health. Role of veterinarian in the control of zoonotic parasite diseases. Characteristics of the particular infections caused by protozoans, trematodes and cestodes in farm, companion animals and humans.			
Assessment methods:	Two oral examinations: Colloquium 1 & 2. There are 5 questions, incl. 1 considering zoonotic / anthroozoonotic infection. Condition: colloquium is passed when > 51% achieved, but general objection: question concerning zoonotic infection must be assessed positively. In case of unforeseen, unusual circumstances mandatory remote teaching and remote assessment methods might be adopted.			
Detail description of assessment methods;	... No extra assessment methods are anticipated.			
Formal documentation of learning outcome:	eHMS entry. Records collected in the course portfolio i.e. individual records of student results, presence lists, database of oral and written questions, written assessments of the students.			
Elements impelling final grade:	To get the semester credit, student has to pass both colloquiums (C1 /protozoan infections & C2 /trematode and cestode infections). The semester credit is calculated as arithmetic mean of C1 & C2 grades.			
Teaching base:	Lecture hall at the Faculty of Veterinary Medicine, laboratories in the Department of Preclinical Sciences			

Mandatory and supportive materials :

1. Taylor M.A., Coop R.L., Wall R.L. Veterinary Parasitology, Blackwell Publishing, 2007.
 2. Bowman D.D. Parasitology for Veterinarians. WB Sanders 2000.
 3. Kassai T. Veterinary Helminthology. Butterworth-Heinemann, 1999
 4. Urquhart G.M. et al. Veterinary Parasitology, Longman Group UK 1987.
 5. Georgi J.R., Georgi M.E. Canine clinical parasitology, Lea & Febiger 1992.
- Relevant scientific publications including those of the module coordinator.

ANNOTATIONS

* 3 – complete and detailed, 2 – moderate, 1 – basic.

Quantitative summary of the module:

Estimated number of work hours per student (contact and self-study) essential to achieve presumed learning outcomes of the module - base for quantifying ECTS:	...100. h
Total ECTS points, accumulated by students during contact learning:	...4. ECTS