

MODULE DESCRIPTION

Module code	M_WE_SEM6 PARAZYT 1
Field of study	Veterinary medicine
Module name (English)	Veterinary parasitology and invasiology 2
Module name (Polish)	Parazytologia i Inwazjologia Weterynaryjna 2
Language of instruction	Polish
Module type	mandatory
Level of studies	uniform Master's degree studies
Form of study	full-time
Year of study	IV
Semester	VII
ECTS credits (contact / non-contact)	4 (2.2 / 1.8)
Academic title/degree, person responsible	Krzysztof Tomczuk, prof. dr hab.
Unit teaching the course	Department of Parasitology and Fish Diseases Sub-Department of Parasitology and Invasive Diseases
Module objective	<p>Reviewing helminths and ectoparasites of companion animals, livestock, free-living animals and humans, with particular emphasis on nematode invasions and arthropod infestations of veterinary and medical importance occurring both in Poland and worldwide.</p> <p>Special attention is given to infections caused by nematodes of the genera <i>Ascaris</i>, <i>Parascaris</i>, <i>Toxocara</i>, <i>Toxascaris</i>, <i>Trichuris</i>, <i>Capillaria</i>, <i>Strongyloides</i>, <i>Dirofilaria</i>, <i>Thelazia</i>, representatives of the family <i>Oxyuridae</i>, <i>Trichinella</i> and other nematodes of veterinary and medical significance, with consideration of their epidemiology, pathogenicity, zoonotic potential and economic impact.</p> <p>The course also covers infestations caused by ectoparasites belonging to the phylum Arthropoda, including representatives of the class Arachnida (orders Acari and Ixodida – e.g. <i>Sarcoptes</i>, <i>Demodex</i>, <i>Otodectes</i>, <i>Psoroptes</i>, <i>Ixodes</i>, <i>Dermacentor</i>, <i>Rhipicephalus</i>) and the class Insecta (orders Diptera, Siphonaptera, Phthiraptera, Hemiptera – e.g. <i>Ctenocephalides</i>, <i>Pulex</i>, <i>Pediculus</i>,</p>

	<p>Haematopinus, Linognathus, Melophagus, Hippobosca, Musca, Stomoxys, Tabanus). Particular emphasis is placed on their role as direct pathogens and as biological or mechanical vectors of infectious and parasitic diseases.</p> <p>Building awareness of the importance of zoonotic nematode and arthropod-borne diseases and their impact on animal health, public health and the One Health concept. Mastering knowledge of general helminthology and veterinary entomology. Presenting the principles of modern diagnosis, therapy, control and prevention of nematode invasions and arthropod infestations in animals and humans.</p>
<p>Learning outcomes – Knowledge (K1–K3)</p>	<p>K1. The student knows the concepts of helminthology and medical/veterinary entomology, including the biology, life cycles and transmission pathways of nematodes (Ascaris, Parascaris, Toxocara, Toxascaris, Trichuris, Capillaria, Strongyloides, Dirofilaria, Thelazia, Oxyuridae, Trichinella) and selected arthropods (Arthropoda: Arachnida, Insecta).</p> <p>K2. The student knows the most important nematode invasions and arthropod infestations of animals and humans, including their epidemiology, pathogenicity, zoonotic potential and economic significance, as well as the role of arthropods as biological and mechanical vectors of infectious and parasitic diseases.</p> <p>K3. The student knows modern diagnostic methods used in nematodology and veterinary entomology (coproscopic, hematological, serological and molecular techniques), as well as antiparasitic drugs (anthelmintics and ectoparasiticides), and understands the principles of therapy, prevention and integrated control of nematode invasions and arthropod infestations.</p>
<p>Learning outcomes – Skills (S1–S2)</p>	<p>S1. The student is able to perform and interpret basic diagnostic procedures used in nematodology and veterinary</p>

	<p>entomology, including coproscopic examination (e.g., flotation, sedimentation), detection of larvae (e.g., Baermann method), blood examination for microfilariae, and identification of selected ectoparasites (mites, ticks, insects) based on morphological characteristics.</p> <p>S2. The student is able to select and apply appropriate anthelmintic and ectoparasiticide treatment in cases of nematode invasions and arthropod infestations, and to propose rational preventive and control measures, including biosecurity, environmental management and integrated parasite control strategies.</p>
<p>Learning outcomes – Social competences (Sc1)</p>	<p>Sc1. The student is aware of the epidemiological and zoonotic risks associated with nematode invasions and arthropod infestations, understands their impact on animal welfare, public health and the One Health concept, and recognises the importance of responsible antiparasitic treatment in preventing drug resistance.</p>
<p>Prerequisites and additional requirements</p>	<p>Sequentiality</p>
<p>Module program content</p>	<p>General helminthology and veterinary entomology. Basic terminology used in helminthology, nematodology and arthropodology. Biology, taxonomy and life cycles of nematodes and selected ectoparasites. Epidemiological factors influencing the occurrence and spread of nematode invasions and arthropod infestations.</p> <p>Methods for recognising parasite invasions and infestations: coproscopic diagnosis (flotation, sedimentation), larval detection methods (e.g. Baermann technique), quantitative egg counting methods, blood examination for microfilariae, skin scrapings, coat brushing, otoscopic and ophthalmic examination, and morphological identification of arthropods.</p> <p>Classes General helminthology and veterinary entomology. Basic terminology used in helminthology, nematodology and arthropodology. Biology, taxonomy and life</p>

cycles of nematodes and selected ectoparasites. Epidemiological factors influencing the occurrence and spread of nematode invasions and arthropod infestations.

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Phylum Arthropoda

- Class Arachnida
 - Order Acari (e.g. Sarcoptes, Psoroptes, Chorioptes, Demodex, Otodectes)
 - Order Ixodida (e.g. Ixodes, Dermacentor, Rhipicephalus)

- Class Insecta
 - Order Siphonaptera (Ctenocephalides, Pulex)
 - Order Phthiraptera (Linognathus, Haematopinus, Damalinia)
 - Order Diptera (Musca, Stomoxys, Tabanus, Hippobosca, Melophagus)

Morphology, identification, host specificity, epidemiology and role as biological or mechanical vectors of pathogens.

Lectures

Nematode invasions and arthropod infestations as clinical problems in carnivores, horses, pigs, ruminants, birds and humans. Pathogenesis, diagnosis and treatment of major nematodoses. Pharmacology of anthelmintics and ectoparasiticides. Integrated parasite control strategies.

Clinical and epidemiological aspects of zoonotic nematode infections and arthropod-borne diseases within the One Health framework.

<p>Recommended literature</p>	<p>Core literature:</p> <ol style="list-style-type: none"> 1. https://www.esccap.org/ 2. Principles of Veterinary Parasitology. John Wiley & Sons Ltd, 2015 3. Eckert J. et al. Lehrbuch der Parasitologie für die Tiermedizin. Enke Verlag, 2004 4. Schnieder T. Veterinarmedizinische Parasitologie. Parey Verlag, 2006 5. Mehlhorn H. et al. Diagnose und Therapie der Parasiten. Gustav Fischer, 1993 <p>Optional:</p> <p>O. Wilford Olsen – Animal Parasites R.C. Anderson – Nematode Parasites of Vertebrates Harold W. Brown, Franklin A. Neva – Basic Clinical Parasitology J.H. Whitlock – Diagnosis of veterinary parasitisms Foreyt & Foreyt – Veterinary parasitology Zajac & Conboy – Veterinary clinical parasitology</p>
<p>Teaching methods</p>	<p>Lectures, practical classes, multimedia presentations, live presentations, microscopy, macroscopic preparations, laboratory studies, parasitological preparations, autopsy studies.</p>
<p>Verification methods</p>	<p>Practical verification during classes – continuous assessment of the student’s ability to recognise nematode developmental stages (eggs, larvae, adults) and selected arthropods (mites, ticks, insects) based on morphological characteristics during laboratory classes.</p> <p>Oral credit after the 4th practical class – verification of practical skills in selected diagnostic methods used in nematodology and ectoparasitology (e.g., flotation techniques, larval detection methods, identification of ectoparasites).</p> <p>Test K1 – General helminthology and veterinary entomology (30 single-choice questions; passing ≥61%) – covering terminology, biology, life cycles, transmission pathways and basic diagnostic principles concerning Nematoda and selected representatives of Arthropoda.</p>

	<p>Test K2 – Nematode invasions and arthropod infestations (30 single-choice questions; same grading scale) – covering epidemiology, pathogenesis, clinical presentation, zoonotic significance, diagnosis, pharmacotherapy (anthelmintics and ectoparasiticides) and principles of prevention and integrated parasite control.</p> <p>Grading scale: 61–68%: 3.0 69–76%: 3.5 77–84%: 4.0 85–92%: 4.5 93–100%: 5.0</p>
ECTS – Contact hours	Lectures – 15 (0.6 ECTS) Classes – 30 (1.2 ECTS) Consultations – 5 (0.2 ECTS) Credit/Retake – 5 (0.2 ECTS) TOTAL – 55 (2.2 ECTS)
ECTS – Non-contact hours	Preparation for classes – 20 (0.8 ECTS) Literature study – 5 (0.2 ECTS) Preparation for colloquia – 20 (0.8 ECTS) TOTAL – 45 (1.8 ECTS)
Final grade conditions	<p>Passing both tests (K1 and K2) and attendance at minimum 13 practical classes.</p> <p>Final grade: 50% K1 + 50% K2 (arithmetic mean).</p>