Parasitology and invasiology (1) (4 ECTS)


Topics of lectures - [2h]:

I-II. Definition and types of parasitism. Relations among hosts and parasites. Occurrence of parasites in animals. Adaptations to parasitism. Main ways of parasitic infections and parasite attitudes that allow establishment of infection in the host.

III-IV. Characteristics of protozoans of Sarcomastigophora – parasitizing in the intestine and reproductive tract of animals (Giardia spp., Histomonas sp., Trichomonas spp., Entamoeba spp.).

V-VIII. Characteristics of protozoans of Sarcomastigophora & Apicomplexa - parasitizing in blood (Trypanosoma sp., Leishmania sp., Babesia sp., Theileria sp., Plasmodium sp.).


XI-XII. Epidemiology, immunobiology and pathology of Schistosomatidae, Opisthorchidae, Proteostrongylidae, Diplostomatidae flukes – review of infections in animals and humans.


 XV-XVI. Epidemiology, Immunobiology and pathology due to tapeworm infection of Anoplocephalidae, Hymenolepididae, Daevidae and Diplididae – parasitizing in birds and mammals.


XIX-XX. Role of Ancylostomatoidea (hookworms) and Strongyloidea (threadworms) in humans and animals.

XXI-XXII. Trichostrongyliidae infections in cattle and small ruminants. Phenomena found during development of gastrointestinal nematode: arrested larvae, spring rise, self-cure.


XXV-XXVI. Infections caused by roundworms and pinworms in farm and companion animals. Pathology and immunobiology of Ascaridiidae and Anisakidiae.

XXVII-XXVIII. Prevalence and immunobiology of nematode infections caused by Spiruroidea (Spirocerca sp., Habronema sp., Draschia sp., Thelazia sp., Gongylonema sp.). The perspectives of skin and heart dirofilariosis control in Poland and Europe.

XXIX-XX. Prevalence and immunobiology of nematode infections caused by Trichuroidea (Capillaria spp., Trichinella spp., Trichuris spp.) in farm and companion animals. Epidemiological and clinical concerns of trichinosis in animals and humans.

Topics of classes:
- 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 Sarcomastigophora in farm, companion animals and humans – p. 1 & 2 [4h]
- Infections caused by protozoans parasitizing in blood (Babesia spp. in cattle and dogs, Hepatozoon spp., Leishmania spp., [2h])
- Infections caused by intestinal coccidia in pigs and carnivorans (Eimeria spp., Isospora spp.). Specificity of N. caninum, and Toxoplasma gondii. [3h]
- Intestinal coccidiosis in poultry, calves, rabbits and foals (Eimeria spp., Cryptosporidium spp., E. truncata, etc.). [2h]
- Diagnostics of protozoan infection in animals – laboratory diagnostics – practical training. [2h]
- Diagnostics and control of fluke infections in large and small ruminants: *F. hepatica, P. cervi, D. dendriticum*. [2 godz.]
- Diagnostics and control of trematode infections in poultry and carnivorans: *Prosthogonimus sp., Echinostomatidae, A. alato, O. felineus*. [2h]
- Infections of *D. latum, T. saginata, T. solium, Hymenolepis sp.* – epidemiology and control. [2h]
- Diagnostics and control of tapeworms in carnivorans: *Echinococcus spp., D. caninum, M. lineatus, T. pisiformis, etc.* [2h]
- Diagnostics and control of tapeworms in cattle, horses and poultry: *Anoplocephalidae, Drepanidotaenia sp., Fimbriaria sp.*, etc. [2h]
- Diagnostics of trematode and cestode infections in animals – laboratory diagnostics – practical training. [2h]

**Teaching forms, number of hours:**

| a) Lectures: 30h |
| b) Classes: 30h |

**Teaching methods:**

1/ Original multimedia presentations prepared by academic teachers
2/ Presentation of diagnostics methods by teachers, student’s own work in parasitological laboratory, investigation of macroscopic and microscopic preparations of parasites slides, testing of biological material (feces, blood, skin scrapings, etc.) for the detection of parasites.
3/ Discussion on basic rules concerning and methods of parasite control in farm and companion animals, incl. these of zoonotic potency.
4/ Consultations (1h/week)

Detailed schedule of the classes and detailed organization of consultations will be defined by the coordinator of the course at the beginning of semester.

**Formal prerequisites and initial requirements:**

- Passing the courses: animal anatomy, animal physiology 1, veterinary microbiology 1

**Learning outcomes:**

Knowledge:
- Student knows characteristics of parasite species, their life cycles and hosts
- Student knows the consequences of parasite infections (incl. zoonotic potency infections) in animals and humans
- Student knows antiparasitic compounds (drugs) and rules concerning their use in the control of parasite infection in animals

Skills:
- Student is able to:
  - recognise clinical symptoms of parasitic infections
  - recognise pathological lesions caused by parasite in affected host
  - choose the adequate diagnostic method(s) to detect parasitic infection

Competences:
- Student is ready to use knowledge to set up the optimal control method parasitic infections
- Student is able to communicate with owner using proper language and terms to discuss infection’s issues

To complete semester student is obliged to pass 2 colloquiums (oral examination). There are 5 questions given by teacher, incl. 1 concerning zoonotic/anthropozoonotic infections. Condition - colloquium is passed when more than 51% achieved, with general objection that answer concerning zoonotic infection must be assessed positively.

Scope of knowledge:
C1 – general parasitology (incl. lecture part) and infections caused by protozoans
C2- infections caused by flukes and tapeworms
Passing of both colloquiums is conducted by the same way.
No extra assessment methods are anticipated.
In case of unforeseen, unusual circumstances mandatory remote teaching and remote assessment methods might be adopted.

**Assessment methods:**

- The eHMS entry and records collected in the course portfolio (general regimen of the course, list of attendance, etc.)

**Formal documentation of learning outcomes:**

To obtain the semester credit student has to pass both colloquiums (C1 & C2), fulfilling condition of attendance according to the WULS-SGGW Regimen.

- The semester eHMS grade consist of 50% C1 and C2, respectively (arithmetic mean). /Note: grade of the semester will be considered for the final grade of the course.

**Teaching base:**

Lecture facilities and laboratories of the Faculty of Veterinary Medicine

**Mandatory and supportive materials:**

6. Relevant scientific publications, including those of the module coordinator.

**ANNOTATIONS**

Students are obliged to respect health and safety rules. Students use protective gears during laboratory classes.
### 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:

<table>
<thead>
<tr>
<th>Learning outcomes relative to the course outcomes</th>
<th>Impact on the each of course outcomes</th>
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<tbody>
<tr>
<td>3</td>
<td>2</td>
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</tbody>
</table>

#### Total ECTS points, accumulated by students during contact learning:

| 2 |

### Learning outcomes of the module relative to the learning outcomes of the subject:

<table>
<thead>
<tr>
<th>Outcome category</th>
<th>Learning outcomes:</th>
<th>Learning outcomes relative to the course outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge - Student knows characteristics of parasite species, their life cycles and hosts</td>
<td>A.W.13</td>
<td>3</td>
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<tr>
<td></td>
<td>A.W.20</td>
<td>2</td>
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<tr>
<td></td>
<td>A.W.1, A.W.2, A.W.4</td>
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<tr>
<td>Knowledge - Student knows the consequences of the parasite infections (incl. zoonotic potency infections) in animals and humans</td>
<td>A.W.13, B.W.10,</td>
<td>3</td>
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<tr>
<td></td>
<td>A.W.11, A.W.12,</td>
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<tr>
<td></td>
<td>A.W.10, B.W.1, B.W.2, B.W.3, B.W.4, B.W.8, B.W.9</td>
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<tr>
<td>Knowledge - Student knows antiparasitic compounds (drugs) and rules concerning their use in the control of parasite infection in animals</td>
<td>A.W.17, A.W.18, A.W.16, B.U.13</td>
<td>3</td>
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<tr>
<td></td>
<td>A.W.21</td>
<td>2</td>
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<tr>
<td>Skills - Student is able to recognise clinical symptoms of parasitic infections</td>
<td>A.U.4</td>
<td>3</td>
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<tr>
<td></td>
<td>B.U.2, B.U.3</td>
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<td>B.U.3, B.U.5, B.U.16</td>
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<tr>
<td>Skills - Student is able to recognise pathological lesions caused by parasite in affected host</td>
<td>B.W.10</td>
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<tr>
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<td>A.U.13</td>
<td>2</td>
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<tr>
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<td>B.U.25</td>
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<tr>
<td>Skills - Student is able to choose the adequate diagnostic method(s) to detect parasitic infection</td>
<td>B.U.6, B.U.13</td>
<td>3</td>
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<td>B.U.21</td>
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<tr>
<td>Competences - Student is ready to use knowledge to set up the optimal control method parasitic infections</td>
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<td>3</td>
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<td>KS.7, KS.8, KS.9</td>
<td>2</td>
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<tr>
<td></td>
<td>KS.5</td>
<td>1</td>
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<tr>
<td>Competences - Student is able to communicate with owner using proper language and terms to discuss the infection's issues</td>
<td>KS.1, KS.9, KS.7, KS.11</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>KS.2</td>
<td>2</td>
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