**Farabi Kazakh National University**

**Faculty of Biology and Biotechnology**

**Department of biodiversity and bioresources**

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|  | APPROVED by **Dean of Faculty**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (signature)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (**Zayadan B.K.)**  **"\_\_\_\_\_\_"\_\_\_\_\_\_\_\_ 2017** |

### EDUCATIONAL-METHODICAL COMPLEX OF DISCIPLINE

### Code: Par 3503

### « Parasitology »

Specialty "Biology – 5В060700"

Educational program for specialty 5B060700 – Biology

Course – 3

Semester – Autumn semester

Number of credits – 4.5

**Almaty 2017**

Educational-methodical complex of the discipline is made by Dautbaeva Kulyash Adilbaevna; Candidate of Biological Sciences; Professor

Based on the working curriculum on the specialty

Biology and Fisheries

Considered and recommended at the meeting of the Department of biodiversity and bioresources

from «05» September 2017 year, protocol № 2

Head of department \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dr. Kurmanbayeva M.S.

(Signature)

### Recommended by methodical bureau of the faculty

«22» June 2017 year, protocol № 9

Chairman of the method bureau of the faculty \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zayadan B.K. (Signature)

**Syllabus**

**Autumn semester 2017 Academic year**

Academic course information

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Discipline’s code | Discipline’s title | | Type | No. of hours per week | | | | Number of credits | | ECTS |
| Lect. | Pract. | | Lab. |
| Par 3503 |  | |  | 2 | 0 | | 1 | 4.5 | |  |
| Lecturer | | Salmurzauli Ruslan | | | | Office hours | | | 31 hours | |
| e-mail | | E-mail: [ruslaan200587@gmail.com](mailto:ruslaan200587@gmail.com) | | | |
| Telephone number | | Telephone: +77471215959 | | | | Auditory | | | 320 | |
| Assistant | | Salmurzauli Ruslan | | | | Office hours | | | 31 hours | |
| e-mail | | E-mail: [ruslaan200587@gmail.com](mailto:ruslaan200587@gmail.com) | | | |
| Telephone number | | Telephone: +77471215959 | | | | Auditory | | | 306 | |

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| --- | --- |
| Academic presentation of the course | **Type of university**: basic mandatory in the block of professional modules OP.  **Aim of course:**  The main goal of the course "Parasitology", read for postgraduate students is a detailed study of the morphology and physiology of parasitic organisms from different taxonomic groups, their adaptations to the parasitic lifestyle, life cycles, etc. Particular attention is paid to the pathogenicity of parasitic organisms, the ways of human infection, domestic and agricultural animals, as well as the clinic and the prevention of parasitic diseases, methods for their diagnosis, including the most modern ones. This course is logically and methodologically related to other parts of the main educational program in the field of ecology, primarily the disciplines of the professional cycle (zoology, general biology, evolutionary theory, ecology, zoogeography, comparative vertebrate anatomy, animal ecological ecology, evolutionary ecology and others.  The discipline "Parasitology" is an important biological discipline, the study of which is necessary for mastering such disciplines as ecology, evolution theory, zoogeography, animal physiology, comparative anatomy, and other zoological disciplines of the variable part of the basic educational program |
| Prerequisites | zoology of invertebrates, ecology |
| Post requisites | general biology, evolutionary theory, vertebrate anatomy |
| Information resources | **literature**:   1. Gibson, D, 1., Jones, A. & Bray, R. A. [Eds]. 2002. Keys to the Trematoda. Vol. 1. CAB International, Wallingford, 521 pp. 2. Jones, A., Bray, R. A. & Gibson, D. I. [Eds]. 2005. Keys to the Trematoda. Vol, 2. CAB International, Wallingford, 745 pp. 3. Bray, R. A., Gibson, D. I. & Jones, A. [Eds]. 2008, Keys to the Trematoda. Vol. 3. CAB International, Wallingford, 824 pp. 4. Moravec F. Parasitic nematodes of freshwater fish of Europe. - Academia. Praha, 1994. - 473 p. 5. Berg Howard R., Taylor Christopher G. [Eds]. 2008. Cell Biology of Plant and Nematode Parasitism. Springer, 271 p. 6. Morand S., B.R. Krasnov, R. Poulin. [Eds], 2006. Micromammals and Macroparasites: From Evolutionary Ecology to Management. Springer, 645 p, 7. Olsen Oliver Wilford. Animal parasites: their life cycles and ecology. Academy Press. 1994. 576 c. 8. Soderhall K. Invertebrate Immunity, [Eds]. 2010. Springer Science+Business Media, LLC Landes Bioscience. - 315 p.   **Internet-resources:**  <http://cal.vet.upenn.edu>  http://mentor .lscf.ucsb. edu  <http://www.parasitology.org>  <http://parasite.biology.uiowa.edu>  <http://www.cdfouiid.to.it/HTML/atlas.htm> |
| Academic policy of the course in the context of university moral and ethical values | **Academic Behavior Rules:**  Obligatory presence in the classroom, inadmissibility of late arrivals. Absence and delay in classes without prior warning of the teacher are estimated at 0 points.  Obligatory observance of the terms of fulfillment and delivery of assignments (on CDS, boundary, control, laboratory, project, etc.), projects, examinations. In case of violation of the deadlines, the task is evaluated taking into account the deduction of penalty points.  1. Students who did not pass the next task or received less than 50% of the score for its performance have the opportunity to work out the specified task on an additional schedule.  2. Students who miss practical classes for a good reason, work out them in extra time in agreement with the teacher. Students who have not completed all types of work are not allowed to take the exam.  For consultations on the performance of independent work (SPS), their surrender and protection, as well as for additional information on the material covered and all other emerging issues on the course read, contact the teacher during his office hours  **Academic values:**  Academic honesty and integrity: independence of all tasks; inadmissibility of plagiarism, forgery, the use of cribs, cheating at all stages of knowledge control, deception of the teacher and disrespectful attitude towards him. (Code of honor student KazNU). Students with disabilities can receive advice on the electronic address of Ruslan.salmurzauli@gmail.com, telephone 87471215959 |
| Evaluation and attestation policy | **Criteria-based evaluation:**  Evaluation of learning outcomes in relation to descriptors (checking the formation of competencies at the boundary control and examinations). The relevant terms of homework or projects can be extended in case of mitigating circumstances (such as illness, emergency cases, accident, unforeseen circumstances, etc.) according to the Academic Policy of the University. The student's participation in the discussions and exercises in the class will be taken into account in his overall assessment for discipline. Constructive questions, dialogue and feedback on the issue of discipline are welcomed and encouraged during classes, and the teacher will take into account the participation of each student in the class in the derivation of the final evaluation.  **Summative evaluation:**  Evaluation of the presence and activity of work in the classroom; assessment of the completed task, CDS (project / case / program / ...)  CDS will be distributed during the semester - 6 assignments in the discipline, which will account for 60% of the final evaluation of the course. The CDS submitted a week later will be accepted, but the estimate is reduced by 50%. Themes of the CDS will be included in the exam questions. In the period of 1-7 weeks it is necessary to carry out 3 CRC tasks with 15 points each. In the period of 8-15 weeks we perform 3 tasks of the CDS with 15 points each. 2 colloquium: 7 weeks - 20 points and 15 weeks - 15 points.  Midterm Exam is held on the topics of lecture classes and seminars, CPC for 1-7 weeks (tickets for three questions will be compiled). |

Calendar (schedule) the implementation of the course content**:**

|  |  |  |  |
| --- | --- | --- | --- |
| Week / date | Topic title (lectures, practical classes, Independent work of students) | Number of hours | Maximum score |
| 1 | 2 | 3 | 5 |
| 1 | **Lecture 1.** « General Introduction: Parasitology» | 2 hour. | 4 |
| **Laboratory 1**. « Ecological Aspects of Parasitism and Parasite-Host Interactions» Commensalism, Phoresis, Parasitism, Mutualism | 2 hour. | 4 |
| 2 | **Lecture 2.** «History and Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Extraintestinal Amoebiasis; Laboratory Diagnosis; Immunity; Treatment of **Amoebae Parasites**» | 2 hour. | 4 |
| **Laboratory 2**. «Visceral Protozoa I: **Rhizopods (Amoebae)** and Ciliophorans” Life Cycle; Epidemiology; Symptomatology and Diagnosis; Chemotherapy; Physiology; Host Immune Response; Prevention; | 2 hour. | 4 |
| 3 | **Lecture 3.** « History and Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Laboratory Diagnosis; Immunity; Treatment **of Intestinal, Oral, and Genital Flagellates**» | 2 hour. | 4 |
| **Laboratory 3** « Nontrichomonad Flagellates and The Genus Trichomonas and Related Forms» | 2 hour. | 4 |
|  | **SSW 1 Basic Principles and Concepts:Parasite Systematics, Ecology, and Evolution.** | 2 hour. | 20 |
| 4 | **Lecture 4** « History and Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Laboratory Diagnosis; Immunity; Treatment **of Hemoﬂagellates**» | 2 hour. | 4 |
| **Laboratory 3** Morphologic Forms of Hemoﬂagellates  Distribution and Pathogenesis; | 2 hour. | 4 |
| 5 | **Lecture 5** « History and Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Laboratory Diagnosis; Immunity; Treatment of **Malaria and Babesia**» | 2 hour. | 4 |
| **Laboratory 5** «Blood and Tissue Protozoa II: Epidemiology; Relapse and Recrudescence; Symptomatology and Diagnosis; Chemotherapy; Host Immune Response; Physiology | 2 hour. | 4 |
| 6 | **Lecture 6** « History and Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Laboratory Diagnosis; Immunity; Treatment **of Coccidia**». | 2 hour. | 4 |
| **Laboratory 6** Blood Protozoa: Toxoplasma gondii; Life Cycle, Epidemiology, Symptomatology and Diagnosis, Chemotherapy, Host Immune Response | 2 hour. | 4 |
|  | **SSW 2 Phylum Apicomplexa: Malaria Organisms and Piroplasms** |  | 20 |
| 7 | **Lecture 7** «History and Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Laboratory Diagnosis; Immunity; Treatment of **Microspora, Pneumocystis Jirovecii, Balantidium Coli»** | 2 hour. | 4 |
| **Laboratory 7** «Phylum Ciliophora: Ciliated Protistan Parasites» | 2 hour. | 4 |
|  | **Total for 7 weeks** |  | 100 |
| … | **Midterm exam** |  | **100** |
| 8 | **Lecture 8** «Cestodes: Tapeworms. Tapeworms: General Characteristics, Pseudophyllidean tapeworms». | 2 hour. | 4 |
| **Laboratory 8** Life Cycle, Epidemiology, Symptomatology and Diagnosis of Tapeworms | 2 hour. | 4 |
| 9 | **Lecture 9 Trematodes: Flukes.** History and Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features; Immunity; Treatment of **Flukes.** | 2 hour. | 4 |
| **Laboratory 9** Pathogenesis and Clinical Features; Laboratory Diagnosis **Extraintestinal Tapeworms,** | 2 hour. | 4 |
| 10 | **Lecture 10** History and Distribution; Morphology; Life Cycle; Pathogenesis and Clinical Features and Treatment of **Nematodes** | 2 hour. | 4 |
| **Laboratory 10** Pathogenesis and Clinical Features of **Nematodes** | 2 hour. | 4 |
| 3 | **SSW 3** Acquired immunity a host’s immune response to previous parasitic infection |  | 18 |
| 11 | **Lecture 11** History and Distribution; Morphology; Life Cycle; Treatment of ***Trichinella Spiralis, Strongyloides Stercoralis*** | 2 hour. | 4 |
| **Laboratory 11** Pathogenesis and Clinical Features of ***Trichinella Spiralis, Strongyloides Stercoralis*** | 2 hour. | 4 |
| 12 | **Lecture 12 Hookworm (Strongyloides Stercoralis)** | 2 hour. | 4 |
| **Laboratory 12** Pathogenesis and Clinical Features; Laboratory Diagnosis of **Hookworm** | 2 hour. | 4 |
| 13 | **Lecture 13 Hookworm (Ascaris Lumbricoides)** | 2 hour. | 4 |
| **Laboratory 12** Pathogenesis and Clinical Features, Laboratory Diagnosis of**Hookworm (Ascaris Lumbricoides)** | 2 hour. | 4 |
| 4 | **SSW 4** Diagnostic Methods in Parasitology |  | 18 |
| 14 | **Lecture 14 Filarial Worms (Wuchereria Bancrofti)** | 2 hour. | 4 |
| **Laboratory 14** Pathogenesis and Clinical Features, Laboratory Diagnosis of**Hookworm** | 2 hour. | 4 |
| 15 | **Lecture 14** Miscellaneous Nematodes | 2 hour. | 4 |
| **Laboratory 14** Pathogenesis and Clinical Features, Laboratory Diagnosis of **Miscellaneous Nematodes** | 2 hour. | 4 |
|  | **Total for 7 weeks** |  | 100 |
|  | **Exam** |  | 100 |
| *Note: Independent work of a student with a teacher is planned at 7 hours per semester. The syllabus is entered on the weeks specified by the teacher as assignments and / or consultations)* | | | |

Lecturer Salmurzayly Ruslan

Head of the Department Dr. Kurmanbayeva M.S.

Chairman of the Faculty Methodical Bureau Zhunusbayeva B.A.