



MINISTRY OF HEALTH OF UKRAINE
NATIONAL UNIVERSITY OF PHARMACY
Department Microbiology, Virology and Immunology

TROPICAL INFCTIONS

(the name of educational component)

**WORK PROGRAM
of educational component**

training for _____ MASTER _____
(Higher Educational Level Name)
in specialty _____ «226 Pharmacy and industrial pharmacy» _____
(Code and Specialty Name)
field of knowledge _____ «22 Health » _____
(Code and Knowledge Field Name)
of educational program _____ « Pharmacy » _____
(Educational Program Name)
in specialization(s) _____ _____
(name of specialization, if available)

Kharkiv-2022
(year of creation)

The work program of the educational component *Tropical infections* in specialty 226 educational program “Pharmacy” in specialization(s)_____for applicants for higher education 2-3 year of study.

EDUCATIONAL COURSE TEAM:

Filimonova Nataliia, Head of the Department of Microbiology, Virology and Immunology,

Doctor of Medicine, Professor

Tischenko Iryna, assistant professor, PhD, senior scientist researcher of Microbiology, Virology and Immunology

(specify the LAST NAME, first name of the authors, their positions, scientific degrees and academic titles)

Work program has been considered and approved at the Department meeting

Record from « 31 » august 2022 № 1

Head of the Department _____

(sig.)



prof. Nataliia FILIMONOVA


(first name LAST NAME)

Educational program has been approved at the meeting of the Methodical Commission of biomedical disciplines

Record from « 12 » september 2022 № 1

Head of Specialized Committee _____

(sig.)



prof. Nadia KONONENKO

(first name LAST NAME)

1. Description of the educational component

Language of study: english

Status of the educational component: selective

Prerequisites for studying the educational component: the study of this discipline is based on the knowledge gained from the disciplines of philosophy, biology, human anatomy and physiology, Latin, microbiology, virology and immunology, biochemistry, pathological physiology, pharmacology, laboratory diagnostics, hygiene.

The subject of educational component study «Tropical infections» is the formation of knowledge about tropical infectious diseases, etiology, epidemiology, pathogenesis and clinic, laboratory diagnosis, treatment and prevention of diseases of infectious genesis in the conditions of tropical climate.

Information content of the educational component. 3 ECTS credit 90 hours are assigned to the study of the educational component.

2. Objectives and tasks of the educational component

The purpose of teaching the educational component « Tropical infections » is the training of specialists, who have a significant amount of theoretical and practical knowledge on the main aspects infectious pathology in tropical climate, development of their clinical thinking, ability of practical application of the acquired knowledge, rational use instrumental and laboratory research methods with an emphasis on early detection patients, mastering the methods of rational therapy, providing emergency care, acquiring skills of primary anti-epidemic measures.

The main tasks of the educational component «Tropical infections» are the search and clarification of modern patterns of spread of tropical infectious diseases and damage to the human body in infectious diseases in tropical climates:

- study of the ways of spreading infectious diseases in tropical climate among different population groups,
- study of mechanisms and ways of interrupting the transmission of infectious diseases,
- study of the features of the clinical course of tropical infections according to the stages of disease,
- prevention of complications in tropical infectious diseases,
- demonstration of understanding of the standards of care for tropical infectious diseases,
- mastering the basic principles of care at the pre-hospital stage,
- familiarization with the main anti-epidemic measures,
- development of preventive measures.

3. Competence and planned educational outcomes

Educational component « Tropical infections » ensures the acquisition of applicants for higher education the following **competences**:

special (professional):

FC 1. Ability to carry out sanitary-educational work among the population with the purpose of prevention of widespread diseases, prevention of dangerous infectious, viral and parasitic diseases, and also to promote timely detection and maintenance of inclination to treatment of these diseases according to their medical-biological characteristics and microbiological features.

Integrative final program learning outcomes (PLO), the formation of which is facilitated by the educational component:

PLO 13. To carry out sanitary and educational work in professional activity in case of outbreaks of infectious, viral and parasitic diseases.

As a result of studying the educational component, the applicant for higher education will be *know*:

- Features of morphology, physiology of pathogens of tropical infectious diseases,
- Development cycles of protozoa and helminths.
- Sources and methods of transmission of infectious agents in tropical climates,
- Pathogenetic patterns of infectious and invasive processes;
- Methods of laboratory diagnostics,
- Schemes of etiotropic therapy and prevention of tropical infectious and invasive diseases;
- Organization of anti-epidemic work in foci of infections, providing population with effective immunobiological drugs.

Be able to:

- Identify the main clinical symptoms that form a characteristic syndrome for the most common tropical infectious diseases and parasitic infestations;
- Interpret the patterns and features of the pathological and epidemiological process in subtropical, tropical infectious diseases;
- To carry out differential diagnosis of subtropical, tropical infectious and parasitic diseases with non-infectious diseases;
- Demonstrate awareness of tropical infectious diseases as weapons of mass destruction;
- Predict the consequences of subtropical, tropical infectious and parasitic diseases on human health.

To possess:

- methods of statistical evaluation of the results of laboratory research;
- specific methods of examination of the most common tropical infectious and parasitic diseases

4. The educational component structure

| Names of content modules and topics | The amount of hours full time study | | | |
|--|-------------------------------------|---------|-------------------|------------|
| | the whole amount | Lecture | Practical lessons | Self-study |
| | | 1 | 2 | 3 |
| MODULE 1. TROPICAL INFECTIONS | | | | |
| Content module 1. <i>Tropical protozoal invasions and helminthiases</i> | | | | |

| | | | | |
|--|-----------|----------|-----------|-----------|
| Topic 1. An Introduction to Tropical Medicine. Features of the course of infectious diseases in countries with a tropical climate Tropical invasions caused by protozoa of the Sarcodes class (amebiasis). | 9 | -- | -- | 9 |
| Topic 2. Tropical invasions caused by protozoa of the flagellate class (leishmaniasis, trypanosomiasis). | 9 | 1 | 2 | 6 |
| Topic 3. Tropical invasions caused by protozoa of the Sporozoa class (malaria). | 8 | 1 | 1 | 6 |
| Topic 4. Tropical helminthiasis caused by trematodes (schistosomiasis, fascioliasis). | 9 | 1 | 3 | 5 |
| Topic 5. Tropical helminthiasis caused by cestodes (echinococcosis, diphyllbothriasis). | 9 | - | - | 9 |
| Topic 6. Tropical helminthiasis caused by round worms (filariasis, ascariasis, ankylostomiasis, racunculiasis). | 8 | 1 | 3 | 5 |
| The whole amount of hours for the content module 1 | 53 | 4 | 9 | 40 |
| Content module 2. <i>Tropical infections of bacterial, viral, rickettsial and fungal etiology..</i> | | | | |
| Topic 7. Tropical blood infections of viral etiology (yellow fever, Congo-Crimea fever, Ebola fever, Chikungunya fever, arboviral encephalitis and encephalomyelitis). | 9 | 1 | 3 | 5 |
| Topic 8: Tropical blood infections of rickettsial etiology (Rocky Mountain spotted fever, Marseille fever). | 9 | 1 | 3 | 5 |
| Topic 9: Tropical infections of the external integument (frambesia, bedwetting, pinta, erysipelas, leprosy) | 9 | 1 | 3 | 5 |
| Topic 10. Tropical mycoses (pyoderma, mycetoma, tinea versicolor, tinea pedis). tinea, coccidioidosis, histoplasmosis). | 9 | 2 | 2 | 5 |
| Control of CM 2 | | | | |
| The whole amount of hours for the content module 2 | 36 | 5 | 11 | 20 |
| Semester credit from module | 1 | | 1 | |
| The whole amount of hours for the course | 90 | 9 | 21 | 60 |

5. Contents of the educational component

MODULE 1 Tropical infections.

Content module 1. *Tropical protozoal invasions and helminthiasis*

Topic 1. Introduction to tropical medicine. Tropical invasions caused by protozoa class Sarcodia (amoebiasis). Introduction to tropical medicine. Features of the course of infectious diseases in countries with tropical climates. The impact of hot climate on the human body. Geography of tropical diseases. of tropical diseases. Tropical diseases caused by protozoa. Classification of protozoa. The structure and biology of representatives of the class Sarcodia. Pathogenesis, clinic, laboratory diagnosis, treatment and prevention of amoebiasis

Topic 2. Tropical invasions caused by protozoa of the class Flagellates. Structure and biology of representatives of the class Flagellates. Tropical diseases caused by by protozoa of the class Flagellates. Pathogenesis, clinic, laboratory diagnosis, treatment and prevention of leishmaniasis, trypanosomiasis.

Topic 3. Tropical invasions caused by protozoa of the class Sporozoa.

Structure and biology of representatives of the class Sporozoa. Tropical diseases caused by by protozoa of the class Sporozoa. Pathogenesis, clinic, laboratory diagnosis, treatment and prevention of malaria..

Topic 4. Tropical helminthic diseases caused by trematodes.

Classification of helminths. Structure, developmental cycle of representatives of the class Trematoda. Pathogenesis, clinic, laboratory diagnosis, treatment and prevention of schistosomiasis, fascioliasis.

Topic 5. Tropical helminthiasis caused by cestodes.

Classification of helminths. Structure, developmental cycle of representatives of the class Cestoda. Pathogenesis, clinic, laboratory diagnosis, treatment and prevention of echinococcosis, diphyllbothriosis.

Topic 6. Tropical helminthiasis caused by roundworms.

Structure, developmental cycle of representatives of the class Nematoda. Pathogenesis, clinic, laboratory diagnosis, treatment and prevention of filariasis, ascariasis, hookworm disease, dracunculiasis. Human diseases caused by migrating larvae of animal helminths.

Content module 2. *Tropical infections of bacterial, viral, rickettsial and fungal etiology..*

Topic 7. Tropical blood infections of viral etiology.

Etiology, pathogenesis, clinic, laboratory diagnostics, treatment and prevention of yellow fever, Congo-Crimea fever, Ebola fever, arboviral encephalitis and encephalomyelitis..

Topic 8. Tropical blood infections of rickettsial etiology.

Etiology, pathogenesis, clinic, laboratory diagnosis, treatment and prevention Rocky Mountain spotted fever, Marseille fever.

Topic 9. Tropical infections of the external integument.

Etiology, pathogenesis, clinic, laboratory diagnosis, treatment and prevention. Frambesia, bed bug, pinto, mumps, leprosy.

Topic 10. Topic 10. Tropical mycoses.

Etiology, pathogenesis, clinic, laboratory diagnosis, treatment and prevention pyoderma, mycetoma, tinea capitis, coccidioidosis, histoplasmosis.

Semester module supervision _ semester credit.

6. Topics of lectures

| № | Name of topic | The amount of hours |
|---------------------------------------|--|---------------------|
| | | full time study |
| Module 1. General microbiology | | |
| 1 | Tropical infections caused by protozoa of the flagellate class (trypanosomes). | 1 |
| 2 | Tropical infections caused by protozoa of the class Sporozoa (malaria). | 1 |
| 3 | Tropical helminth infections caused by trematodes (schistosomiasis). | 1 |
| 4 | Tropical helminthiasis caused by roundworms (filariasis). | 1 |
| 5 | Tropical blood infections of viral etiology (yellow fever, Ebola fever). | 1 |
| 6 | Tropical blood infections of rickettsial etiology (spotted fever Rocky Mountain spotted fever, Marseille fever). | 1 |
| 7 | Tropical infections of the external integument (frambesia, bedwetting, pinta). | 1 |
| 8 | Tropical mycoses (pyoderma, mycetoma, tinea versicolor). | 2 |
| The whole amount of hours | | 9 |

7. Topics of practical lessons

| № | Name of topic | The amount of hours |
|----------------------------------|---|---------------------|
| | | full time study |
| 1 | Introduction to tropical medicine. Tropical infections caused by protozoa. by protozoa. Tropical infections caused by protozoa. Malaria. Trypanosomiasis. | 3 |
| 2 | Tropical helminthiasis caused by trematodes - schistosomiasis, fascioliasis | 3 |
| 3 | . Tropical helminthiasis caused by roundworms - filariasis, dracunculiasis filariasis, hookworms, dracunculiasis. 3 | 3 |
| 4 | Tropical blood infections of viral etiology. Yellow fever, Ebola, Congo-Crimea fever. 3 | 3 |
| 5 | 5. Tropical blood infections of rickettsial etiology. Spotted Rocky Mountain spotted fever, Marseille fever. | 3 |
| 6 | Tropical infections of the external integument. Frambesia, bejel, pinta. | 3 |
| 7 | 7. Tropical mycoses. Piedra, mycetoma, tinea versicolor | 3 |
| The whole amount of hours | | 21 |

8. Self-study work

| № | Name of topic | The amount of hours |
|----|--|---------------------|
| | | full time study |
| 1 | Introduction to tropical medicine. Features of the course of infectious diseases in countries with tropical climates. Tropical invasions, caused by protozoa of the Sarcodia class (amoebiasis). | 9 |
| 2 | Tropical infections caused by protozoa of the class Flagellate (leishmaniasis, trypanosomiasis). | 6 |
| 3 | Tropical infections caused by protozoa of the class Sporozoa (malaria). | 6 |
| 4 | Tropical helminth infections caused by trematodes (schistosomiasis, fascioliasis). | 5 |
| 5 | Tropical helminthiasis caused by cestodes (echinococcosis, Diphyllbothriasis) | 9 |
| 6 | Tropical helminthiasis caused by roundworms (filariasis, ascariasis, hookworm disease, hookworm disease, hookworm disease). | 5 |
| 7 | Tropical blood infections of viral etiology (yellow fever, Congo-Crimea fever, Ebola fever, Chikungunya fever Chikungunya, arboviral encephalitis and encephalomyelitis). | 5 |
| 8 | Tropical blood infections of rickettsial etiology (spotted Rocky Mountain spotted fever, Marseille fever). | 5 |
| 9 | Tropical infections of the external integument (frambesia, bedwetting, pinta, erysipelas, leprosy). | 5 |
| 10 | Tropical mycoses (pyoderma, mycetoma, tinea versicolor, coccidioidosis, histoplasmosis) | 5 |
| | The whole amount of hours | 60 |

Tasks for Self-study work

1. Preparation of lecture notes on the topic.
2. Performing tasks in the workbook.
3. Testing on the topic.

9. Criteria and evaluation order of educational outcomes

The success of the applicant for higher education in the semester (module) is evaluated on a 100-point scale, which consists of the current control of theoretical, practical training at each lesson, independent work, the results of content module controls.

The success of a higher education applicant is assessed on a 100-point scale, which consists of current control of theoretical training at each lesson, independent work, results of content module tests (maximum 100 points in total).

The minimum number of points assigned to higher education applicants for mastering module is 60.

Current control includes assessment of theoretical knowledge, practical skills and independent work of higher education students, as well as control of content modules, and is

carried out during classroom classes.

Control of classroom work is carried out at each practical lesson in accordance with specific goals. It includes an oral survey, a written survey, an individual interview, testing.

Control of independent work assesses the level of knowledge that higher education students receive independently during self-preparation for classes, as well as by working through the list of questions, included in the content modules.

Points for the educational component are awarded according to the ratio shown in Table 1

Table 1

Points from the educational component are awarded according to the following ratio

| Types of assessment | Maximum number of points (% of the number of points per module - for content modules) |
|---|--|
| MODULE 1 | |
| Content module 1: <i>Tropical protozoan invasions and helminthic diseases.</i> .Assessment of topics (2-6) (work in classes 1-3): work in classes (oral questioning, test tasks); - control of content module 1 (test tasks, oral questioning). | 45 (45 %) |
| Content module 2: <i>Tropical infections of bacterial, viral, and fungal etiology, rickettsial and fungal etiologies.</i> - Assessment of topics (7-10) (work in classes 4-7): work in classes (oral questioning, preparation of test tasks); - - control of content module 2 (test tasks, oral questioning) | 55 (55 %) |
| Semester control of module | 100 |

The current control rating is calculated on a cumulative basis.

Depending on the curriculum of the current academic year, the number of classes per semester, the grade in a practical class may vary, but the overall rating is in accordance with the ECTS scale.

In the practical class, the grade for higher education students is assigned according to the criteria, given in Table 2.

Table 2.

Criteria for evaluating the results of learning activities in practical classes

| Scale | Criteria | Evaluation of the lesson in points, min - max |
|--------------------------------------|---|--|
| | | 6 - 10 |
| "5" excellent 90-100% | Tasks for independent preparation for the lesson are completed correctly and in full. Answers to theoretical questions on the topic of the lesson are given correctly and clearly. Practical tasks during classroom work are completed correctly and in full. | 9,0-10,0 |

| | | |
|---|--|-----------|
| "4" very good 82-89% | Tasks for self-preparation for the class are completed correctly and in full. Answers to theoretical questions on the topic of the class are provided in full with minor deviations. Practical tasks during classroom work are performed with minor deviations. | 8,2-8,9 |
| "4-" good 74-81% | Tasks for self-preparation for the class are performed with minor errors. Answers to theoretical questions on the topic of the class are incomplete with inaccuracies. Practical tasks during classroom work are performed with minor deviations. | 7,4-8,1 |
| "3" Satisfactory 64-73% | Tasks for self-preparation for the class are performed with significant errors. Answers to theoretical questions on the topic of the class are provided incompletely or with significant errors. Practical tasks during classroom work are performed with significant deviations. | 6,4-7,3 |
| "3-" enough 60-63% | Tasks for independent preparation for the class are partially completed and with significant errors. Answers to theoretical questions on the topic of the class are incomplete with significant errors. Practical tasks during classroom work are partially completed with significant deviations. | 6,0 – 6,3 |
| "2" Unsatisfactory 0-59% | Tasks for independent preparation for the class are not completed or completed incorrectly. Answers to theoretical questions on the topic of the class are not provided. Practical tasks during classroom work are not completed or completed incorrectly. | 0 - 5,9 |

The control of mastering the content modules (CM) is carried out at the last practical lesson of studying the topics of CM. Only those applicants for higher education who have completed all types of work provided by the curriculum, worked out the missed practical classes are allowed to control the CM. The means of diagnosing the level of training of higher education applicants are testing, theoretical oral or written questioning. The result of control of mastering the content module is set according to the criteria given in Table 3.

Table 3.

Criteria for evaluating the results of control of content modules

| | Evaluation in points, min - max | Criteria | |
|--------------------|---------------------------------|--------------------|------------------------|
| | | Passing test tasks | Answer to the question |
| Control CM 1, CM 2 | 9-15 | 6-10 | 3-5 |

The structure of the content module test includes 20 test tasks and questions.

Semester control is conducted in the form of a semester test.

The results of semester control in the form of a semester test are evaluated on a 100 point,

undifferentiated scale ("passed", "failed") and on the ECTS scale.

A higher education applicant is considered admitted to semester control if he or she has completed all the classroom training sessions provided for in the work program for the educational component classes, completed all types of work provided for in the work program for the educational component.

The higher education applicant receives a credit at the last lesson of the educational component based on the results of the current assessment. This type of final control does not involve any additional work, surveys or testing at the last class.

The final grade in the educational component for the semester is the final semester grade, consisting of the points of the current control.

Grades A, B, C, D, E are assigned only to higher education students who have been enrolled in a module from the educational component.

The FX grade corresponds to "unsatisfactory" ("not enrolled") and the higher education student may be admitted to the semester control subject to certain additional work.

They have the right to retake the test during the winter break and within 2

(additional) weeks after the end of the spring semester according to the schedule approved by the rector.

Applicants for higher education who received a grade of F, which corresponds to "not enrolled", must undergo re-study the educational component.

Based on the total result, the student's academic record is assigned grade:

Transformation of the national grading scale into the ECTS system (European Community Course Credit Transfer System. European Community Course Credit Transfer System)

| Sum of points for all types of educational activities | | Evaluation on the national scale |
|---|----|--|
| 90-100 | A | excellent |
| 82-89 | B | good |
| 74-81 | C | |
| 64-73 | D | satisfactory |
| 60-63 | E | |
| 35-59 | FX | unsatisfactory with the possibility of retaking |
| 1-34 | F | unsatisfactory with mandatory re-study of the discipline |

"A" - the student has firmly mastered the theoretical material, deeply and comprehensively knows the content of the educational components, the main provisions of scientific sources and recommended literature, logically thinks logically and constructs an answer, freely uses the acquired theoretical knowledge in analyzing the material, expresses their attitude to certain problems;

- "B, C" - the student has mastered the theoretical material well, knows the main aspects of the of the primary sources and recommended literature, reasonably presents it; expresses his/her the student has mastered the theoretical material, knows the main aspects of the primary sources and recommended literature, expresses his/her views on certain issues, but makes certain inaccuracies and mistakes in the logic of presentation of theoretical content;

- "D, E" - the student has basically mastered the theoretical knowledge of the educational component, is oriented in the primary sources and recommended literature, but gives unconvincing answers, confuses concepts, additional questions cause uncertainty or lack of stable knowledge; is unable to evaluate facts and phenomena, relate them to future activities;
- "FX, F" - the student has not mastered the educational material of the educational component, does not know scientific facts, definitions, has little or no knowledge of primary sources and recommended literature; no scientific thinking

Scoring scheme and points distribution

Distribution of points for module 1

| Current testing and independent study | | | | | | | | | | | | Total |
|---------------------------------------|----|----|----|----|----|------------------|----|----|----|-----|-------|-------|
| Content module 1 | | | | | | Content module 2 | | | | | | |
| T1 | T2 | T3 | T4 | T5 | T6 | CCM 1 | T7 | T8 | T9 | T10 | CCM 2 | |
| - | 5 | 5 | 10 | - | 10 | 15 | 10 | 10 | 10 | 10 | 15 | 100 |

10. Forms of progress and semester supervision of academic achievements

Form of control - semester credit.

Current control is carried out systematically during the semester during practical classes and is evaluated by the amount of points gained for the assessment of theoretical knowledge, practical skills and independent work of the applicant for higher education, as well as control of content modules, and is conducted during classroom classes. Current control is mandatory, the knowledge of higher education students is assessed at each lesson (on each topic).

Control of practical work is carried out at each practical lesson in accordance with specific goals. It includes oral questioning, individual interview, testing, evaluation of practical tasks.

Control of independent work assesses the level of knowledge that higher education students acquire independently during self-preparation for classes, as well as working through the list of questions included in certain modules. Independent work of higher education students is evaluated during the current control and during the content module.

Semester control is carried out in the form of a semester test and a semester exam on the educational component in the amount of educational material determined by the work program and in the terms established by the curriculum.

A higher education applicant is considered admitted to semester control if he has worked all the classroom classes provided by the work program for the educational component, has completed all the types of work provided by the work program for the educational component.

A higher education applicant receives a credit at the last lesson of the educational component based on the results of the current assessment. This type of final control does not provide any additional work, surveys or testing at the last lesson.

Credit is given to applicants for higher education who have scored the required minimum number of points during the current control (60 points and above), have no unexcused absences from practical classes and have fulfilled all the requirements provided by the work program of the educational component.

11. Methodological support

1. Work program of the educational component
2. Plans of practical classes
3. Lecture notes.
4. Presentations of lectures.
5. Study guide.
6. Tasks for current control.
7. Base of test tasks.
8. Tasks for independent work of students.
9. Tasks for a comprehensive control work.
10. Methodical materials for self-study.

12. Reading suggestions Information and educational and methodological support of the discipline:

| | |
|---|--|
| Required reading | Tropical infections: synopsis of lecture to laboratory classes / I.L. Dikiy, N.I. Filimonova M.M. Velikaya et al. – Kharkiv: NUPH: Golden Pages, 2010. – 80p. |
| Additional literature for in-depth study of the educational component | Tropical infections [Text] : laboratory exercises. - [S. l. : s. n.], [2012].-44 p. https://www.sciencedirect.com/book/9780702051012/mansons-tropical-infectious-diseases <i>Manson's Tropical Infectious Diseases</i> |
| Actual electronic information resources (journals, websites, etc.) for in-depth study of the educational component | https://www.mdpi.com/journal/tropicalmed <i>Tropical medicine and infectious diseases</i> https://clinmedjournals.org/international-journal-of-tropical-diseases.php <i>International Journal of Tropical diseases</i> https://tropmedhealth.biomedcentral.com/ <i>Tropical Medicine and Health</i> http://www.who.int/en/ <i>World health organization</i> https://www.cdc.gov <i>Centers for diseases control and prevention</i> |
| Moodle distance learning system | https://pharmel.kharkiv.edu/moodle/course/view.php?id=3735 |