**Kharkiv National Medical University**

**Department of Microbiology, virology and immunology named by D. P. Grynyov**

**Educational program for training specialists of the second (master's)**

**level of higher education 22 "Health care"**

**in specialty 222 "Medecine"**

**SYLLABUS OF THE COURSE**

**clinical microbiology, virology and immunology**

6th year

|  |  |  |
| --- | --- | --- |
| The syllabus of the discipline was approved at the meeting of the department  Microbiology, virology and immunology named by D. P. Grynyov  Protocol from  “\_\_28\_\_” August 2020 № \_\_\_  Head of Department  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ prof. Mishyna M.M. (signature) (surname and initials)  “\_\_28 \_\_” \_ August\_\_ 2020 |  | Approved by the methodical commission of KhNMU on the problems of natural science training  Protocol from  “\_28\_” August 2020 № \_\_\_  Chairman of the methodical commission of KhNMU on the problems of natural science training  \_\_\_\_\_\_\_\_\_\_\_\_ prof. Nakonechna OA (signature) (surname and initials)  “\_\_28 \_\_” \_ August\_\_ 2020 |

**Kharkiv 2020**

**Course title: microbiology, virology and immunology**

**Compiler of the syllabus: DM, Professor Maryna M. Mishyna**

**Contact phone and E-mail of the department:**. tel.(057) 707-73-62, [kaf.7med.mikrobiolohii@knmu.edu.ua](mailto:kaf.7med.mikrobiolohii@knmu.edu.ua)

**Consultations:** schedule and venue according to the schedule of the department.

**Online consultations**: schedule and venue by prior arrangement with the teacher.

**Location:** classes are held at the Department of Microbiology, virology and immunology named by D. P. Grynyov KhNMU, remotely - in Google Meet, Moodle, ZOOM.

Information about teachers:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Position | Email | Zoom |
| Maryna Mishina | Professor, Head of the department | mm.mishina@knmu.edu.ua | ID 9780243344  Code: 185847 |
| Yulia Mozgova | PhD, Associate Professor | ya.mozghova@knmu.edu.ua | ID 639 134 4847  Code: 954617 |
| Olena Kotsar | PhD, Associate Professor | ov.kotsar@knmu.edu.ua | ID 8545389600  Code: Microbiology1# |
| Olexandra Vovk | PhD, Associate Professor | oo.vovk@knmu.edu.ua | ID 7950276795  Code: 0 |
| Natalia Kovalenko | PhD, Associate Professor | ni.kovalenko@knmu.edu.ua | ID 235 322 4966  Code: SPmu6B |
| Olena Kochneva | PhD, senior teacher | ov.kochnieva@knmu.edu.ua | ID 828 796 9896  Code: 1234 |
| Tetiana Kovalenko | PhD, senior teacher | ti.kovalenko@knmu.edu.ua | ID 2318163423  Code: 547704 |
| Natalia Popova | PhD, senior teacher | nh.popova@knmu.edu.ua | ID 3978779610  Code: 152688 |
| Evhenia Shtanyuk | PhD, teacher | ya.shtaniuk@knmu.edu.ua | ID 9543175258  Code: 1 |
| Olena Dubovyk | PhD, teacher | os.dubovyk@knmu.edu.ua | ID 2888720263  Code: 673492 |
| Olena Hopta | PhD student, teacher | ov.hopta@knmu.edu.ua | ID 7947020650  Code: 12345 |
| Hanna Isaieva | PhD student, teacher | ho.isaieva@knmu.edu.ua | ID 2931814435  Code: 123 |
| Iryna Marchenko | PhD student, teacher | ia.marchenko@knmu.edu.ua | ID 8652384901  Code: 111 |

**Discipline information**

Semester/ Stydying year: XI or XII/ 6

120 hours and 4 ECTS credits are allocated for the study of the academic discipline during 6th yaer (20 hours for practical classes nd 100 hours for student’s independent work).

**General characteristic of the course**

The discipline "Clinical Microbiology, Virology and Immunology" studies the origin, evolution and properties of opportunistic and pathogenic microorganisms, the role of normal microflora of the human body, relationship between microorganisms and macroorganisms, immune system and mechanisms of immune responce to bacterial, viral, fungal and protozoan infections, diagnostic methods, manedment principles and specific profilaxis of infectious diseases, development of infectious and inflammatory processes found in all departments of clinics (therapeutic, surgical, obstetric, pediatric, traumatological, urological and others), their properties features of the relationship with the macroorganism and methods of microbiological diagnosis. In addition, its competence includes such issues common to all clinical disciplines as nosocomial infections, normal microflora, laboratory control of sanitary and anti-epidemiological regime in health care institutions.

**INFORMATION ABOUT THE DISCIPLINE**

**"CLINICAL MICROBIOLOGY, VIROLOGY AND IMMUNOLOGY"**

|  |  |  |  |
| --- | --- | --- | --- |
| Name  indicators | Field of knowledge, direction of training, educational and qualification level | Characteristics of the academic discipline | |
| full-time education | |
| Number of credits - 4.0 | Educational program for training specialists of the second  (master's)  level of higher education training 22 "Health" | Elective component | |
| The total number of hours is 120 | Specialty:  222 "Medecine" | **Year of preparation:** | |
| 6th | |
| **Semester** | |
| 11 or 12 | |
| **Lectures** | |
| Hours for day form of study:  classroom - 20  independent student work - 100 | Educational and qualification  level:  master |  |  |
| **Practical classes** | |
| 20 h | |
| **Laboratory** | |
| *-* | |
| **Independent work** | |
| 100 h | |
| **Individual tasks:** | |
| Type of control:  **Credit** | |

The course program determines the prerequisites for access to education, orientation and main focus of the program, the amount of ECTS credits required for a master's degree, a list of general and special (professional) competencies, normative and variable content of training, formulated in terms of learning outcomes and control requirements quality of higher education.

The department accepts qualified students of any race, national or ethnic origin, gender, age, people with special needs, any religion, sexual orientation, gender, veteran status or marital status for all rights, privileges, programs and activities, provided to university students.

Discipline page in the Moodle system

<http://31.128.79.157:8083/course/index.php?categoryid=53> .

**Aim and tasks of studying the course**

The purpose of studying microbiology, virology and immunology is determined by the ultimate goals set on the basis of programe training for doctor in the specialty in accordance with the block of its sections (scientific training), and is the basis for building the content of the discipline. The description of goals is formulated through skills in the form of target tasks (actions). On the basis of the ultimate goals for each section, specific goals are formulated in the form of certain skills (actions), target tasks that ensure the achievement of the ultimate goal of studying the discipline.

**Discipline status**: elective Discipline format: mixed (provides traditional forms of classroom learning in combination with elements of e-learning with support in the Moodle and Zoom system.

**Teaching methods:**

• visual ans practical (illustration, demonstation, experiment);

• informative (presentation, video, methodical instructions, lectures);

• scientific (participation in scientific research of department)

• control (testing, situational tasks, evaluation of practical skills).

**Recommended books:**

1. Jawetz, Melnick, & Adelberg’s Medical Microbiology, 26th Edition, 2012, English. – 880 р. – ISBN-13: 978-0071790314
2. Murray PR. Human microbiota. In: Borriello SP, Murray PR, Funke G, eds. Topley and Wilson`s Microbiology and Microbial Infections: Bacteriology. 10th edition. London: HodderArnold, 2014.
3. Murray PR. Medical microbiology / Patrick R.Murray, Ken S. Rosenthal, Michael A. Pfaller; consultant, JMI Laboratories. - 8th edition. Philadelphia: Elsevier Inc, 2016.

**Prerequisites and co-requisites**.

The discipline "Clinical Microbiology, Virology and Immunology" are is related to such disciplines as Medical Biology, Human Anatomy, Histology, Cytology and Embryology, Latin, Pathophysiology, Pathomorphology, General Hygiene, Epidemiology, Immunology and Allergology, Infection diseases.

**Teaching outcomes**

Outcomes of studying the discipline "Clinical Microbiology, Virology and Immunology" the student must be able to:

- Assess the state of the microbiocenosis of the human body;

˗ Interpret the results and perform serological tests in infectious diseases of general profile;

˗ Interpret the results and conduct microbiological studies of biological fluids and secretions;

˗ Anticipate the negative effects of dangerous factors on the human body;

- Master modern methods of microbiological research in infectious diseases of general profile;

- Analyze the principles of obtaining vaccines and immune sera, methods of their standardization and control, practical use;

- Demonstrate mastery of moral and ethical principles of attitude to a living person, his body as an object of anatomical and clinical research.

**The content of the discipline**

**List of practical classes topics**

|  |  |  |
| --- | --- | --- |
| № | Topic | Quantity of hours |
| **Part 1 Morphology and physiology of microorganisms. Infection. Immunity** | | |
| 1 | Tasks and methods of clinical microbiology. Organization of microbiological laboratories and preparation of material for research. Modern research methods in microbiological laboratories. | 2 |
| 2 | Current state and prospects of antimicrobial chemotherapy. Mechanisms of bacterial resistance to antibiotics, clinical significance and ways to overcome it. Modern methods for determining the sensitivity of microorganisms to antibacterial drugs. Organization of chemotherapeutic services in the hospital. | 2 |
| 3 | Normal microflora of the human body. Relationships of micro- and macroorganisms. The role of representatives of the normal microflora in the occurrence of nosocomial infections. Bacterial pathogenicity factors. | 2 |
| 4 | Microbiological blood tests. Diagnosis of bacteremia, sepsis. | 2 |
| 5 | Respiratory infections. The main pathogens, principles of microbiological diagnostics and proper chemotherapy. | 2 |
| 6 | Intestinal infections. The main pathogens, principles of microbiological diagnostics and proper chemotherapy. | 2 |
| 7 | UT infections. The main pathogens, principles of microbiological diagnostics and proper chemotherapy. | 2 |
| 8 | Wound and burn infection. The main pathogens, principles of microbiological diagnostics and proper chemotherapy. | 2 |
| 9 | Epidemiological control in the system of measures for the prevention of nosocomial infections | 2 |
| 10 | Conclusion | 2 |
| **Total (hours)** | | **20** |

**Individual student’s work**

(total – 100 hours)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **№** | | **Topic** | Quantity of hours | | |
| 1. | | Methods of microbiological diagnosis of viral infections. | 6 | | |
| 2. | | Methods of microbiological diagnosis of mycoses. | 6 | | |
| 3. | | Methods of microbiological diagnosis of protozoan infections. | 6 | | |
| 4. | | Nosocomial infections. Epidemiology, etiology, clinical manifestations and microbiological diagnosis. Evolution of microorganisms that cause nosocomial infection. Problems of control, treatment and prevention of nosocomial infections. | 6 | | |
| 5. | | Methods of microbiological diagnosis of infectious diseases of the eyes and ears. | 4 | | |
| 6. | | Methods of microbiological diagnosis of infectious diseases of the CNS. | 4 | | |
| 7. | | Prepare essays to choose from: |  | | |
|  | | Etiology and epidemiology of infections caused by opportunistic pathogens. The current state of the problem. | 6 | | |
|  | | Clinically significant causative agent of respiratory infections.  Heamophilus spp, Moraxella spp. | 6 | | |
|  | | Laboratory diagnosis of newborn infections. | 4 | | |
|  | | AIDS associated infections. | 6 | | |
| 8. | | Creation of schemes of laboratory diagnostics of infectious diseases. | 6 | | |
| 9. | | Practical skills |  | | |
|  | | Isolation of pure culture of the infectious causative agent. | 4 | | |
|  | | Identification of pure cultures of microorganisms | 4 | | |
|  | | Determine antibiotic susceptibility of bacterial cultures. | 8 | | |
|  | | Formulation and interpretation of biochemical tests, serological tests | 6 | | |
| 10. | | Preparing a review of the scientific literature or conducting research (optional): |  | | |
|  | | Monitoring of the etiological structure of nosocomial infectious agents for the selected period in Kharkiv | 8 | | |
|  | | Monitoring of the bacterial resistance to antibiotics of nosocomial infectious agents for the selected period in Kharkiv | 8 | | |
| 11. | | Preparation for the conclusion | 2 | | |
| **Total (hours)** | | | **100** |

**POLICY AND VALUES OF THE DISCIPLINE**

In order to successfully complete the relevant course, it is necessary to regularly attend practical classes; to have theoretical preparation for practical classes according to the subject; not to be late and not to miss classes; perform all necessary tasks and work in each lesson; be able to work with a partner or in a group; contact the curators of the course on various issues on the subject of classes and receive it when you need it.

Students have the right to discuss various tasks, but their performance is strictly individual. It is not allowed to write off, use various software tools, tips, use electronic gadgets during classes for purposes other than the educational process. Students are not allowed to be late for practical classes.

Students are encouraged to participate in research and conferences on this topic.

Students with special questions can meet with the teacher or warn him before the start of classes, at the request of the student it can be done by the group leader. If you have any questions, please contact the teacher.

KhNMU provides training and work that is free from discrimination, sexual harassment, intimidation or exploitation. All students of KhNMU are protected by *the "Regulations on the Prevention, Prevention and Settlement of Cases Related to Sexual Harassment and Discrimination at Kharkiv National Medical University*", which is designed to define an effective mechanism for resolving conflict situations related to discrimination and sexual abuse.

The regulation is developed on the basis of the following normative legal acts of Ukraine: the Constitution of Ukraine; Law of Ukraine "On Education"; Law of Ukraine "On Higher Education"; Law of Ukraine "On Principles of Prevention and Counteraction of Discrimination in Ukraine"; Law of Ukraine "On Ensuring Equal Rights and Opportunities for Women and Men"; Convention for the Protection of Human Rights and Fundamental Freedoms; Convention for the Suppression of Discrimination in Education; Convention on the Elimination of All Forms of Discrimination against Women; General recommendation № 25 to paragraph 1 of Article 4 of the Convention on the Elimination of All Forms of Discrimination against Women; General Comment № 16 (2005) “Equal rights for men and women to enjoy economic, social and cultural rights” (Article 3 of the International Covenant on Economic, Social and Cultural Rights; UN Economic, Social and Cultural Rights Committee); Recommendations on education in the spirit of international understanding, cooperation and peace and education in the spirit of respect for human rights and fundamental freedoms (UNESCO); The concept of the State Social Program to ensure equal rights and opportunities for women and men for the period up to 2021.

The University recognizes the importance of confidentiality. All persons responsible for the implementation of this policy (employees of deans' offices, faculties, institutes and the Center for Gender Education, members of the student government and ethics committee, vice-rector for scientific and pedagogical work) are confidential about persons who reported or accused of discrimination or sexual harassment (except when the law requires disclosure and / or when disclosure by the University is necessary to protect the safety of others).

KhNMU creates a space of equal opportunities, free from discrimination of any national, racial or ethnic origin, sex, age, disability, religion, sexual orientation, gender, or marital status. All rights, privileges, programs and activities granted to students or staff of the University apply to all without exception, provided they are properly qualified. The anti-discrimination policy and the policy of counteracting sexual harassment of KhNMU are confirmed by the Code of Corporate Ethics and the Charter of KhNMU.

It is important for students to follow the rules of good behavior at the university. These rules are common to all, they also apply to all faculty and staff, and do not differ in principle from generally accepted norms.

**Behavior in classes**

It is important for students to follow the rules of good behavior at the university. These rules are common to all, they also apply to all faculty and staff, and are not fundamentally different from the generally accepted norms.

During classes it is allowed:

leave the audience for a short time if necessary and with the permission of the teacher;

drink soft drinks;

take photos of presentation slides;

take an active part in the class.

Forbidden:

eat;

smoking, drinking alcohol and even low-alcohol beverages or drugs;

to use obscene language or use words that offend the honor and dignity of colleagues and faculty;

gaff;

to damage the material and technical base of the university (damage inventory, equipment; furniture, walls, floors, litter the premises and territories);

shouting, shouting or listening to loud music in classrooms and even in corridors during classes.

*Plagiarism and academic integrity.* D.P. Grynyov Department of Microbiology, Virology and Immunology maintains zero tolerance for plagiarism. Students are expected to constantly raise their awareness of academic writing. On first lessons it will be provided information on what to consider plagiarism and how to properly conduct research and scientific research.

*Occupational Health.* The first lesson of the course will explain the basic principles of labor protection by conducting appropriate training. It is expected that every higher education seeker should know where the evacuation exit closest to the audience is, where the fire extinguisher is, how to use it, and so on.

The procedure for informing about changes in the syllabus: the necessary changes in the syllabus are approved by the methodical commission of KhNMU on problems of general and pre-professional training and published on the site of KhNMU, the site of the D.P. Grynyov Department of Microbiology, Virology and Immunology.

**Using of electronic gadgets**

Usingof electronic gadgets during studying is allowed without restriction except those cases when it may interfere with the ways of objective assessment of students' knowledge.

**Politics of academic integrity**

The plagiarism is unaccepted in the Kharkiv National Medical University. In turn the students are expected to master the recommended literature and original sources during preparation of assignments doing the references. The students are explained how to correctly cite the sources in the text, make references and describe them, how to search information.

**Policy for people with the special educational needs**

The studying is carried out taking into account the requirements of modern Ukrainian legislation in relation to persons with special educational needs and is regulated by the university.

**Recommendations for successful mastering the discipline**

In the process of preparation for practical classes students should study the recommended literature. Active participation during the discussion in the classroom is welcome, students should be ready to understand the material in detail, ask questions, express their point of view, discuss.

**Incentives and penalties**

According to the "Instructions for the evaluation of educational activities in the European credit-transfer system of the educational process in the KhNMU" students can increase the grade for the module by performing individual tasks (making the reports, participation in scientific conferences, competitions, preparation of reviews, etc.) in case of success gives 10 points as an incentive.

**Safety precautions**

The first lesson includes an explanation of the basic principles of labour protection. Every student should know the location of nearest evacuation exit, the fire extinguisher, how to use it, etc.

**Procedure for informing about changes in the syllabus**

The possible changes in the syllabus will be announced on the department page of the of the official website of KhNMU, in the department’s directory in Moodle, and at the dean-office

**Evaluation system and requirements**

**Types of control.** Assessment of students is carried out in accordance with the "Instructions for assessing the educational activities of students in the European credit transfer system for the organization of the educational process in the KhNMU."

The current educational activity of students is controlled by the teacher of the academic group. After the mastering each topic the teacher marks student using a 4-point (national) system. As a result of the semester the teacher automatically receives the average grade for the current educational activity with the help of the electronic register.

**Methods of control.** The current control includes following methods: individual and frontal questioning, blitz-questioning, solving situational tasks, tests, work in groups, written assignments, presentations of individual reports.

**Forms of control.** The final control is carried out at the last lesson, might include all forms of current control and provided by the study program of the discipline. According to the results of study activities, a credit of a two-point scale ("credit" - "non credit") is given.

The average grade for the current activity is converted to the multipoint scale for the courses which studying is finished with a credit.

**Conversion of the average score for current activity into a multipoint scale**

The evaluation of the study activity is carried out according to general and professional competencies and converted into the multipoint scale.

**Assessment of current learning activities**

When assessing the each topic of the discipline and the conclusion, the student is graded according to the traditional 4-point system: "excellent", "good", "satisfactory" or "unsatisfactory".

The final score for the current learning activity and the conclusion is defined as the arithmetic mean of the traditional grades for each class and conclusion, rounded to 2 decimal places and listed in a multi-point scale according to the standard table.

The final score for IPA and, accordingly, the grade for the discipline is defined as the arithmetic mean of traditional grades for each lesson, rounded to 2 decimal places and converted into a multi-point scale according to the table.

The maximum number of points that a student can score for studying the discipline - 200 points, the minimum - 120 points.

Assessment of the results of the discipline is conducted directly at the last (test) lesson.

After completing the study of the discipline, the teacher puts the student's number of points in the record book and fill in the progress of students in the discipline in the form: U-5.03A - credit.

Students who do not enroll in the discipline are given "FX" or "F" ("unsatisfactory").

Table

Recalculation of the average score for current activities in a multi-point scale

(for disciplines ending with a credit)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 4- score scale | 200- score scale |  | 4- score scale | 200- score scale |  | 4- score scale | 200- score scale |
| 5 | 200 | 4.22-4,23 | 169 | 3.45-3,46 | 138 |
| 4.97-4,99 | 199 | 4.19-4,21 | 168 | 3.42-3,44 | 137 |
| 4.95-4,96 | 198 | 4.17-4,18 | 167 | 3.4-3,41 | 136 |
| 4.92-4,94 | 197 | 4.14-4,16 | 166 | 3.37-3,39 | 135 |
| 4.9-4,91 | 196 | 4.12-4,13 | 165 | 3.35-3,36 | 134 |
| 4.87-4,89 | 195 | 4.09-4,11 | 164 | 3.32-3,34 | 133 |
| 4.85-4,86 | 194 | 4.07-4,08 | 163 | 3.3-3,31 | 132 |
| 4.82-4,84 | 193 | 4.04-4,06 | 162 | 3.27-3,29 | 131 |
| 4.8-4,81 | 192 | 4.02-4,03 | 161 | 3.25-3,26 | 130 |
| 4.77-4,79 | 191 | 3.99-4,01 | 160 | 3.22-3,24 | 129 |
| 4.75-4,76 | 190 | 3.97-3,98 | 159 | 3.2-3,21 | 128 |
| 4.72-4,74 | 189 | 3.94-3,96 | 158 | 3.17-3,19 | 127 |
| 4.7-4,71 | 188 | 3.92-3,93 | 157 | 3.15-3,16 | 126 |
| 4.67-4,69 | 187 | 3.89-3,91 | 156 | 3.12-3,14 | 125 |
| 4.65-4,66 | 186 | 3.87-3,88 | 155 | 3.1-3,11 | 124 |
| 4.62-4,64 | 185 | 3.84-3,86 | 154 | 3.07-3,09 | 123 |
| 4.6-4,61 | 184 | 3.82-3,83 | 153 | 3.05-3,06 | 122 |
| 4.57-4,59 | 183 | 3.79-3,81 | 152 | 3.02-3,04 | 121 |
| 4.54-4,56 | 182 | 3.77-3,78 | 151 | 3-3,01 | 120 |
| 4.52-4,53 | 181 | 3.74-3,76 | 150 | **< 3** | **Not enough** |
| 4.5-4,51 | 180 | 3.72-3,73 | 149 |  |  |
| 4.47-4,49 | 179 | 3.7-3,71 | 148 |
| 4.45-4,46 | 178 | 3.67-3,69 | 147 |  |  |
| 4.42-4,44 | 177 | 3.65-3,66 | 146 |  |
| 4.4-4,41 | 176 | 3.62-3,64 | 145 |  |  |
| 4.37-4,39 | 175 | 3.6-3,61 | 144 |  |  |
| 4.35-4,36 | 174 | 3.57-3,59 | 143 |  |  |
| 4.32-4,34 | 173 | 3.55-3,56 | 142 |  |  |
| 4.3-4,31 | 172 | 3.52-3,54 | 141 |  |  |
| 4,27-4,29 | 171 | 3.5-3,51 | 140 |  |  |
| 4.24-4,26 | 170 | 3.47-3,49 | 139 |  |  |

**Assessment of the conclusion lesson**

Conclusion is conducted in accordance with the curriculum of the discipline schedule, during classes.

To prepare the following materials are presented on department:

- test tasks;

- list of theoretical questions (including questions on independent work);

- list of practical skills;

- criteria for assessing the knowledge and skills of students;

- schedule of students work offs during the semester.

**Assessment of individual student tasks**

At the meeting of the department should be approved a list of individual tasks (participation in reports at student conferences, profile competitions, preparation of analytical reviews with presentations) with the definition of the number of points for their implementation, which can be added as incentives (not more than 10).

Points for individual tasks are awarded to the student only once as a commission (commission - head of the department, vice-head, group teacher) only if they are successfully completed and defended. In no case may the total amount of points exceed 120 points.

Individual tasks are performed in the form of writing research work of students / topics on the subject of the discipline being studied, within each section.

Writing essays on topics:

1. Etiology and epidemiology of infections caused by opportunistic pathogens. The current state of the problem

2. Clinically significant causative agent of respiratory infections.

Heamophilus spp, Moraxella spp.

3. Laboratory diagnosis of newborn infections.

4. AIDS-associated infections.

Assimilation of topics that are submitted only for independent work is checked during the final lesson and exam.

Head of the DP Grynyov department of

microbiology, virology and immunology,

professor M.M Mishyna