

**MINISTRY OF HEALTH OF UKRAINE  
ODESA NATIONAL MEDICAL UNIVERSITY**

**Medical, International Faculty**

**Department of General and Clinical Epidemiology and Biosafety**

**with course in Microbiology and Virology**

**Syllabus of course  
“VIRAL HEPATITIS”**

<b>Volume:</b>	Total number of hours: 90 hours, 3 credits Semester: VII – VIII. 4 <sup>th</sup> course
<b>Days, Time, Place:</b>	According to the Schedule Department of General and Clinical Epidemiology and Biosafety with course in Microbiology and Virology, academic discipline “Microbiology, Virology and Immunology”.  Odesa, 1 Knyazivska str., rooms 1-6
<b>Teacher(s)</b>	Hruzesvkiy O.A., MD, Doctor of Science, full professor; Associate professors: Holovatiuk O.L., MD, PhD, Koltsova I.G., MD, PhD, Kurtova M.M., MD, PhD, Shevchuk H.Y., PhD; Assistant professors: Denysko T.V., Dubina A.V, MD, Kahliak M.D., Tabulina A.M., Tarasov Y.V., MD
<b>Contact information</b>	<i>Phone:</i> Shevchuk Hanna, Head of studies 093-419-96-77 Dubina Anzhela, responsible for the organizational and educational work of the department 067-428-63-43 Cheban Maya, laboratory assistant 048-753-09-81 <i>E-mail:</i> <a href="mailto:onmedumicrobio@onmedu.edu.ua">onmedumicrobio@onmedu.edu.ua</a> ; Offline consultations: Thursday – 14.00 - 16.00; Saturday – 9.00 - 13.00; Online consultations: Thursday – 14.00 - 16.00; Saturday – 9.00 - 13.00; The link to the online consultation is provided to each group during the classes separately.

## COMMUNICATION

Communication with students will be carried out in the classroom (in person).

During distance learning, communication is carried out through the Microsoft Teams platform, Moodle, as well as through e-mail correspondence, Viber and Telegram messengers (through groups created in Telegram for each group, separately through the group head).

## ANNOTATION OF THE COURSE

*The subject of study of the discipline is modern classification, etiology of viral hepatitis, clinical manifestations of the disease in different age groups of patients, methods of serological diagnosis of viral hepatitis (determination of hepatitis markers), modern approach to the treatment and prevention of viral hepatitis, use of vaccination to reduce the spread of viral hepatitis in society.*

*Prerequisites and post-requisites of the discipline (place of the discipline in the educational program):*

*Prerequisites:* Ukrainian language (for professional purposes), foreign language (for professional purposes), Latin and medical terminology, medical biology, medical and biological physics, biological and bioorganic chemistry, human anatomy, histology, cytology and embryology, physiology, microbiology, virology and immunology, pathological physiology, pathological anatomy, clinical immunology and allergology.

*Post-requisites:* epidemiology, infectious diseases with pediatric infectious diseases, internal medicine other clinical disciplines.

*The purpose is* to master the knowledge and skills on the etiology, modern diagnostics of viral hepatitis, methods of treatment and prevention.

*The tasks of the discipline:*

1. To form an understanding of the mechanisms of infection, the effect of viruses on liver cells, the immune response and other aspects of the pathogenesis of hepatitis.
2. To develop the ability to correctly diagnose viral hepatitis using clinical, laboratory and instrumental methods.

*Expected result:*

*As a result of studying the discipline, the student has to:*

*Know:*

- modern classification and characterization of viral hepatitis pathogens;
- epidemiology, mechanism of transmission and pathogenesis of hepatitis A and E;
- epidemiology, mechanism of transmission and pathogenesis of hepatitis B, C, D, G;
- serological markers of viral hepatitis A and E;
- serological markers of viral hepatitis B;
- serological markers of viral hepatitis C;
- approaches to the treatment and prevention of viral hepatitis, according to the protocols of medical care and clinical guidelines of the Ministry of Health of Ukraine;
- approaches to ensuring the quality of donated blood and blood products, in accordance with the regulations and guidelines of the Ministry of Health of Ukraine to prevent the spread of viral hepatitis B and C.

*Be able:*

- perform express diagnostic methods for viral hepatitis B and C (immune chromatography);
- analyze the patient's epidemiological history and clinical and laboratory parameters in various forms of viral hepatitis;
- interpret the results of serological testing in the examination of patients with viral hepatitis B;
- interpret the results of serological testing in patients with viral hepatitis C;
- interpret the results of serological testing in patients with hepatitis A and E.

## **DESCRIPTION OF THE COURSE**

*Forms and methods of teaching*

The course will be presented in the form of practical lessons (30 hours), organization of independent work of students (60 hours).

*Teaching methods:* conversation, explanation, discussion, discussion of the acute issues; visual methods: illustration (including multimedia presentations); testing.

*The content of the discipline*

Theme 1: Modern classification of human hepatitis viruses. General characteristics of hepatitis causing viruses.

Theme 2. Hepatitis with fecal-oral mechanism of transmission (HAV, HEV) - virion structure, cultivation, ecology of viruses in the environment, the natural history of the disease in different cohorts, differences in laboratory diagnosis in different stages of the disease.

Theme 3: Hepatitis B virus (HBV) - virion structure, cultivation, antigenic structure of the virus, epidemiology and pathogenesis of the disease, features of the course in children and adults.

Theme 4. Laboratory diagnosis of hepatitis B at different stages of the disease. The main laboratory markers of hepatitis B.

Theme 5. Hepatitis C virus (HCV) - structure and cultivation of the virus, antigenic characteristics and variability of the virus, epidemiology and pathogenesis of the disease, differences in the natural history of the disease in children and adults.

Theme 6. Methods of laboratory diagnosis of hepatitis C, criteria for laboratory diagnosis of hepatitis C.

Theme 7. Other pathogens of viral hepatitis - HDV, HGV, TTV, SENV, their position in the structure of the total incidence of viral hepatitis. Methods of laboratory diagnostics.

Theme 8: Fibrosis in patients with chronic hepatitis. Immunopathogenesis and non-invasive tests. Viral hepatocarcinogenesis.

Theme 9: Approaches to the treatment of viral hepatitis, according to the standards of care.

Theme 10. Prevention of viral hepatitis.

Theme 11: Vertical transmission of viral hepatitis. Prevention of viral hepatitis in newborns.

Theme 12: Other pathogens that can cause liver damage - leptospirae, herpesviruses (Epstein-Barr virus, CMV), yellow fever virus, malaria plasmodium and others. Differential diagnosis, laboratory confirmation.

Theme 13: Viral hepatitis in the structure of socially significant diseases. Mixed infection - HIV, hepatitis, tuberculosis. High-risk groups for these diseases. Prevention: specific and non-specific.

Theme 14. Blood service in Ukraine. Requirements for donated blood and blood testing for the presence of laboratory markers of viral hepatitis and other infections (HIV and syphilis), according to the regulations and clinical guidelines of the Ministry of Health of Ukraine.

Theme 15. Sanitary virology. Circulation of hepatitis viruses with fecal-oral mechanism of transmission (hepatitis A and E) in the environment and human population, natural focus. Sanitary and virological study of water for the presence of enteroviruses, including hepatitis A virus, as sanitary significant viruses.

#### *List of recommended literature:*

##### *Main:*

1. Abbas, A., Litchman, A. H. & Pillai, S. Basic Immunology - 6th Edition. (Elsevier Ltd, 2019).
2. Anantharyan R. Jayaram Paniker C. K. Textbook of Microbiology. 12-th Edition.- Orient Longman, 2022.
3. Male, D., Peebles, S. & Male, V. Immunology. (2020).

##### *Additional:*

4. Barer, M. & Irving, W. L. Medical Microbiology 19th Edition A Guide to Microbial Infections: Pathogenesis, Immunity, Laboratory Investigation and Control. vol. 19 (2018).
5. Burrell, C. J., Howard, C. R. & Murphy, F. A. Fenner and White's Medical Virology: Fifth Edition. Fenner and White's Medical Virology: Fifth Edition (Elsevier Inc., 2016).
6. Cann, A. J. Principles of Molecular Virology: Sixth Edition. Principles of Molecular Virology: Sixth Edition (Elsevier Inc., 2015). doi:10.1016/C2014-0-01081-7.
7. Girard-Madoux MJH, Gomez de Agüero M, Ganal-Vonarburg SC, Mooser C, Belz GT, Macpherson AJ, Vivier E. The immunological functions of the Appendix: An example of redundancy? Semin Immunol. 2018 Apr;36:31-44. doi: 10.1016/j.smim.2018.02.005. Epub 2018 Mar 2. PMID: 29503124.
8. Gomez de Agüero, M., Rahimi-Midani, A. Don't forget the bacteriophages. Lab Anim 51, 160–161 (2022). <https://doi.org/10.1038/s41684-022-00986-1>
9. Gupta VK, Paul S, Dutta C. Geography, Ethnicity or Subsistence-Specific Variations in Human Microbiome Composition and Diversity. Front Microbiol. 2017 Jun 23;8:1162. doi: 10.3389/fmicb.2017.01162. PMID: 28690602; PMCID: PMC5481955.

10. Louten, J. & Reynolds, N. Essential Human Virology. (2016).
11. Marsh D, P., Lewis A O, M., Rogers, H., Williams W, D. & Wilson, M. Marsh and Martin's Oral Microbiology. (Elsevier Limited, 2016).
12. Mooser C, Gomez de Agüero M, Ganal-Vonarburg SC. Standardization in host-microbiota interaction studies: challenges, gnotobiology as a tool, and perspective. Curr Opin Microbiol. 2018 Aug;44:50-60. doi: 10.1016/j.mib.2018.07.007. Epub 2018 Jul 26. PMID: 30056329.
13. Nath, S. K. & Revankar, S. G. Problem-based microbiology. (Saunders, 2006).
14. Ream, Walt. Molecular microbiology laboratory : a writing-intensive course. (Academic Press, 2013).
15. Rich, R. R. & Fleisher, T. A. Clinical Immunology (Fifth Edition) Principles and Practice. Clinical Immunology (2018).
16. Sandle, T. Pharmaceutical Microbiology: Essentials for Quality Assurance and Quality Control. Pharmaceutical Microbiology: Essentials for Quality Assurance and Quality Control (Elsevier Inc., 2015). doi:10.1016/C2014-0-00532-1.
17. Wilson, J. (Nurse) & Stucke, V. A. Clinical microbiology : an introduction for healthcare professionals. (Baillière Tindall, 2000).

## CRITERIA EVALUATION

*Ongoing control:* individual survey on the theme, testing, evaluation of practical skills, solving situational problems, the ability to analyze and interpret research results and correctly draw reasonable conclusions, evaluation of activity in the classroom.

### Criteria of ongoing assessment at the practical class

Score	Assessment criterion
Excellent «5»	The student takes an active part in practical classes, demonstrates deep knowledge, gives complete and detailed answers to questions. Takes an active part in discussing problem situations, demonstrates good skills and abilities in performing practical tasks, correctly evaluates the results. Test tasks are completed in full.
Good «4»	The student participates in practical classes; has a good command of the material. Demonstrates the necessary knowledge, but answers questions with some mistakes; participates in the discussion of problem situations. Test tasks are completed in full, at least 70% of answers to questions are correct.
Satisfactory «3»	The student sometimes participates in practical classes; partially speaks and asks questions; makes mistakes when answering questions; shows passive work in practical classes. Demonstrates skills and abilities in performing practical tasks, but evaluates the results obtained insufficiently fully and accurately. Testing is completed in full, at least 50% of answers are correct, answers to open questions are not logical, with obvious significant errors in definitions.
Unsatisfactory «2»	The student does not participate in the practical lesson, is only an observer; never speaks and does not ask questions, is not interested in learning the material; gives incorrect answers to questions, demonstrates insufficient skills and abilities,

cannot cope with practical work and evaluation of the results. Testing is not completed.
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*Final control:* Credit is given to an applicant who has completed all the tasks of the work program of the discipline, actively participated in seminars and has an average current grade of at least 3.0 and has no academic debt.

*Possibility and conditions for receiving additional (bonus) points:* not provided.

## INDEPENDENT WORK OF STUDENTS

Independent work involves preparation for each seminar, independent study of a certain list of topics or topics that require in-depth study. Questions on topics assigned for independent study are included in the control measures.

## COURSE POLICY

### *Policy on deadlines and retakes:*

- Unexcused absences will be made up as scheduled by the teachers on duty.
- Excused absences are made up on an individual schedule with the permission of the dean.

### *Policy on academic integrity:*

It is obligatory to observe academic integrity by students, namely independent performance of all types of work, tasks, forms of control provided by the work program of this discipline:

- references to sources of information in case of using ideas, developments, statements, information;
- compliance with copyright and related rights legislation;
- providing reliable information about the results of their own educational (scientific) activities, used research methods and sources of information.

Unacceptable in educational activities for participants in the educational process are:

- the use of family or official ties to obtain a positive or higher grade during any form of control of learning outcomes or advantages in scientific work;
- use of prohibited auxiliary materials or technical means (cribs, notes, micro-headphones, phones, smartphones, tablets, etc.) during control assessments;
- passing the procedures for controlling the results of training by fictitious persons.

For violation of academic integrity, students may be brought to such academic responsibility:

- lowering the results of the assessment of control work, assessment in the classroom, test, etc;
- repeated passing of assessment (control work, test, etc.)
- appointment of additional control assessments (additional individual tasks, control works, tests, etc.);
- conducting an additional check of other works of the offender's authorship.

### *Policy on attendance and lateness:*

Uniform: medical gown that completely covers the outer clothing, or medical pajamas, cap, mask, change of shoes.

Equipment: notebook, pen.

Health status: students with acute infectious diseases, including respiratory diseases, are not allowed to attend classes.

Lateness to classes is not allowed. A student who is late for the lesson may attend it, but if the teacher has put "ab" in the register, they must make it up in the general order.

### *Use of mobile devices:*

The use of any mobile devices is prohibited. In case of violation of this paragraph, the student must leave the class and the teacher puts "ab" in the register, which they must make out up the general order.

Mobile devices can be used by students with the permission of the teacher if they are needed to complete the task.

*Behaviour in the classroom:*

The behavior of students and teachers in the classroom must be working and calm, strictly comply with the rules established by the Regulations on Academic Integrity and Ethics of Academic Relations at Odesa National Medical University, in accordance with the Code of Academic Ethics and Relations of the University Community of Odesa National Medical University, the Regulations on the Prevention and Detection of Academic Plagiarism in the Research and Educational Work of Higher Education Students, Researchers and Teachers of Odesa National Medical University.