



**DISCIPLINE SYLLABUS**  
**«VETERINARY VIROLOGY»**

**Degree of higher education — Master**  
**Specialty — 211 Veterinary Medicine**  
**Educational program «Veterinary Medicine»**  
**Year of study — 2, semester — 4**  
**Form of full-time study — full-time study**  
**Number of ECTS credits — 5**  
**The language of instruction is English**

**Course lecturer**  
**Lecturer contact**  
**information (e-mail)**  
**Course page in eLearn**

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**<https://elearn.nubip.edu.ua/course/view.php?id=393>**

**DESCRIPTION OF THE DISCIPLINE**

The discipline "Veterinary Virology" is a mandatory component of the educational program "Veterinary Medicine". The study of the discipline "Veterinary Virology" provides Mastery of such general competencies as knowledge and understanding of the subject area, the ability to search, process and analyze information from various sources, the ability to apply knowledge in practical situations and at the Lab, and understand the morphology, physiology, genetics of viruses, their role in the circulation of substances in human, animal and plant pathology. Students learn to study the properties of viruses, analyze the results obtained in laboratory diagnosis, predict the appearance of dangerous viruses, develop new methods and tools for diagnosis and prevention (vaccines, diagnostics, sera).

## COURSE STRUCTURE

Theme	Hours (lectures / Lab + practical)	Learning outcomes	Tasks	Assessment
<b>Fourth semester</b>				
<b>Thematic Module 1. Determinate viruses at the pathological material</b>				
Topic 1. Introduction at the veterinary virology	1 / 1	Know: Safety rules and work with virus content materials. Equipment virology laboratory. Be able to grind, homogenize, filter and dose the test material. Use Seitz filters, syringes, thermostat, other modern laboratory devices	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>
Topic 2. The chemical structure and ultra structure of viruses	<b>1 / 1+1</b>	Know: Shape, size and Ultrastructure of viruses (genom, capsid, nucleocapsid, nucleoid, supercapsid), types of simmetria of viruses. Nucleid acids of viruses. Be able to Sampling, transportation and primary processing of pathological material for virological study. Fluorescent microscopy in virology. Use centrifuges, homogenizers, filters, scales, syringes, dispensers; thermostat, other modern laboratory devices, Fluorescent and Light microscopy	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>
Topic 3. Taxonomy of viruses	<b>1 / 1</b>	Know: The principles of taxonomy viruses, criteria of modern taxonomy viruses. Short characteristic of modern taxonomy viruses of vertebrales, non-vertebrales, plant, fungus, bacteria. Be able to Detection of viruses using a light microscope. Detection of elementary cells, viral	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn).	<b>5</b>

		inclusions-cells. Use Fluorescent and Light microscopy	Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	
Topic 4. Genetic of viruses. Reproduction and cultivate of viruses	<b>1 / 1+1</b>	Know: Genetic of viruses. Structura of viruses genome. Genotype and fenotyp of viruses, Stam, serotype, variant, klon. Methods of viruses selection. Mutation and its mechanism at the viruses. Reproduction viruses at the sensitive cells. Be able to Development of methods for infection of laboratory animals by the virus content material. Titration of virus Use of laboratory animals, syringes, calculator	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>
Topic 5. Pathogenesis of viruses infection. Antivirus immunity. Specific biological drugs, tests. Antivirus drugs.	<b>1 / 1</b>	Know: The way of penetrated viruses at the organism. Mechanism of spread viruses at the organism. Tropism of viruses. Characteristic of viruses infection at the cell's level: autonome, integrated, producted, abortion, acute, chronic, lytic, non-lytic. Antiviruses immunity. Be able to Electron microscopic study of viruses, method of staining Use Electron microscopy	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>
<b>Thematic Module 2. DNA-content viruses. Viruses cultivation at the lab</b>				
Topic 6. Family Herpesviridae & Family Poxviridae	<b>1 / 1+1</b>	Know: Taxonomy and characteristic of the family. Pathogens of Aujeszky disease, infection rinotracheit of cattle, rinopneumonia of horse, malignum catarrhally fever of cattle, Marek disease, infection larynx and tracheitis of birds. Family Poxviridae. Taxonomy and characteristic of the family. Pathogens of the pox of sheep, birds, pigs, cows; mixomathoses and fibromatoses of rabbit, paravaccine of cattle and contagiose pustule dermatitis. The design of EM, making preparations for EM. Learning methods for primary cell cultures by trypsynization. Be able to Cooking utensils, salt and nutrient media for culturing cell culture, Primary cell cultures. Use Cooking utensils, salt and nutrient media,	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>

		laboratory glassware		
Topic 7. Family Adenoviridae. Family Parvoviridae	<b>1 / 1</b>	Know: Adenovirus at the cattle, horse, pathogen of infection dog's hepatitis and fox encephalites, adenoviruses of sheep and goat, pigs, birds. Family Parvoviridae. Taxonomy and characteristic of the family. Pathogens of the parvoviral infection of dogs, cats panleucopenia, parvoviral infection of pigs parvoviral infection of cattle, mink enteritis, enteritis of geese and Aleutian mink. Study methods of infection of cell cultures, revealing cytopathogen of viruses into cells. Be able to Cultivation of viruses in cell cultures Use Cooking utensils, salt and nutrient media, laboratory glassware, Light microscopy	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>
Topic 8. Families Asfarviridae & Iridoviridae	<b>1 / 1+1</b>	Know: Taxonomy and characteristic of the family. Pathogens of the African plaque of pig Be able to Cultivation of viruses in chicken embryos developing countries. Assimilation techniques infection CE. Signs of viral replication in OM. Autopsy CE, selection of virus content material. Use CE, syringes.	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>
<b>Thematic Module 3. RNA-content viruses. Methods of viruses determination</b>				
Topic 9. Family Flaviviridae & Family Reoviridae.	<b>1 / 1</b>	Know: Taxonomy and characteristic of the family. Pathogens of the classic plaque of pig, viruses diarrhea of cattle. Family Reoviridae. Taxonomy and characteristic of the family. Rotaviruses infection of cattle, pigs, African plaque of horse. Be able to Hemagglutination viruses. Study methods staging RHA. The development of serological methods for diagnosis of viral diseases. Setting RDHA. RHAD and RDHA. Use laboratory glassware	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>
Topic 10. Family Coronaviridae	<b>1 / 1.5+1</b>	Know: Taxonomy and characteristic of the family. Pathogens of the transmissible gastroenteritis of pigs, neonatal diarrhea of calves, infection bronchitis of birds. Study methods to maintain these cells in the laboratory	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory	<b>5</b>

		Be able to Complement fixation test (CFT). Definitions and types of FMD virus variants using RPR. Use Cooking utensils, salt and nutrient media, laboratory glassware	employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	
Topic 11. Family Orthomyxoviridae & Family Paramyxoviridae	<b>1 / 1</b>	Know: Taxonomy and characteristic of the family. Pathogens of the influence, Newcastle disease of birds and plaque of the carnivores.. Be able to Neutralization CE Use Cooking utensils, salt and nutrient media, laboratory glassware	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>
Topic 12. Family Rhabdoviridae	<b>1 / 1+1</b>	Know: Taxonomy and characteristic of the family. Pathogens of the rabies Be able to Immunosorbent assay (ELISA). Application of ELISA in laboratory practice. Study of standard diagnostics are used in veterinary medicine, immunofluorescence reaction. Use Fluorescent and Light microscopy	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>
Topic 13. Family Picornaviridae	<b>1 / 1</b>	Know: Taxonomy and characteristic of the family. Pathogens of the murrain, vesicles disease of pigs, Teschen disease. Viruses hepatitis of ducklings. Be able to Molecular genetic methods in virology (PCR). Use Cooking utensils, salt and nutrient media, laboratory glassware	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>
Topic 14. Family Retroviridae	<b>1 / 1+1</b>	Know: Taxonomy and characteristic of the family. Pathogens of the infection anemia of horse, leucosis of cattle Be able to Neutralization reaction. Methods of Production. Identification and determination of virus titer antibodies by RN.	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn).	<b>5</b>

		Use Cooking utensils, salt and nutrient media, laboratory glassware	Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	
Topic 15. Family Bunijaviridae & Family Arenaviridae. Priones	<b>1 / 1</b>	Know: Taxonomy and characteristic of the family Be able to Reaction diffusion precipitation in agar gel (PRD). Use Cooking utensils, salt and nutrient media, laboratory glassware	Preparation for lectures (preliminary acquaintance with the presentation and full-text lecture in eLearn). Execution and delivery of laboratory work (in methodical recommendations — during laboratory employment, and independently — in eLearn). Doing independent work (tasks in eLearn). Preparation and writing of a modular test (descriptive part in the form of written / oral answer — in the classroom, test — in eLearn).	<b>5</b>
Possibility to receive additional scores: Additional scores can be obtained for preparing a report and participating in a student conference				Up to 10 points
Total for the semester				70 points
Test				30 points
All together				100 points

### EVALUATION POLICY

Deadline and recompilation policy:	Laboratory, independent and modular works must be submitted in the planned time before the end of the study of the current module. Violation of the deadlines without a good reason entitles the teacher to lower the grade. Reassignment of modular control work occurs in the presence of valid reasons (for example, hospital) and is allowed in the term before the end of the following module.
Academic Integrity Policy:	Copying, use of mobile devices, and additional literature when writing modular tests, tests and exams are strictly prohibited.
Visiting policy:	Attendance at lectures and laboratory classes is mandatory for all students in the group. Late classes are not allowed. A lab coat is a must in laboratory classes. For objective reasons (for example, illness, international internship) training can take place according to an individual curriculum approved in a certain order. Missed lectures, after their processing by the applicant of higher education, are worked out in the form of an interview with the teacher. Missed laboratory classes are worked out by students in the laboratory of the department, information about the practice is entered into the departmental journal of the practice of missed classes.

### STUDENT EVALUATION SCALE

Rating of the applicant of higher education, points	The national assessment is for the results of examinations, tests	
	exam	tests
90-100	excellent	credited
74-89	good	
60-73	satisfactorily	
0-59	unsatisfactorily	not credited