

SYLLABUS

1. General information on the course

Full course name	Actual issues of COVID-19
Full official name of a higher education institution	Sumy State University
Full name of a structural unit	Academic and Research Medical Institute. Кафедра інфекційних хвороб з епідеміологією
Author(s)	Svitailo Vladyslav Serhiiiovych, Saienko Oleksandr, Malysh Nina Hryhorivna, Chemych Mykola Dmytrovych
Cycle/higher education level	The Second Level Of Higher Education, National Qualifications Framework Of Ukraine – The 7th Level, QF-LLL – The 7th Level, FQ-EHEA – The Second Cycle
Duration	one semester
Workload	5 ECTS, 150 hours. For full-time course 36 hours are working hours with the lecturer (36 hours of seminars), 114 hours of the individual study.
Language(s)	English

2. Place in the study programme

Relation to curriculum	Elective course available for study programme "Medicine"
Prerequisites	Internal Diseases, Pathomorphology and Pathophysiology, Microbiology, Virology and Immunology
Additional requirements	There are no specific requirements
Restrictions	There are no specific restrictions

3. Aims of the course

The purpose of the discipline is to provide students with up-to-date knowledge and professional skills to work with patients with COVID-19, carriers of the SARS-CoV-2 virus, and to monitor contact persons and persons at risk of COVID-19 infection.

4. Contents

Topic 1 Acute respiratory diseases caused by coronaviruses. Etiological features of SARS-CoV-2

The main causative agents of acute respiratory diseases. Types of coronaviruses that cause SARS. Structure of the SARS-Cov2 virus, its strains. The concept of strains that are "of concern" (Variants of Concern).

<p>Topic 2 Epidemiology, pathogenesis of COVID-19 disease development</p> <p>Source of coronavirus infection, mechanisms of transmission, susceptible population. Prevalence and predominant strain. Mechanism of virus entry into the cell, target cells, levels of interaction with the immune system, pathogenetic mechanisms of clinical manifestations of the disease.</p>
<p>Topic 3 Classification, main clinical symptoms of coronavirus infection</p> <p>Incubation period of COVID-19, features of the course. Main clinical symptoms of coronavirus infection. Difference in clinical course depending on the pathogen strain.</p>
<p>Topic 4 "Red flags" - symptoms of severe COVID-19</p> <p>Features of severe course in patients with COVID-19. Main clinical symptoms and syndromes.</p>
<p>Topic 5 Principles and methods of laboratory diagnostics</p> <p>The main three methods of diagnosing coronavirus infection. Rapid antigenic tests, serological tests for the detection of antibodies, molecular tests. Mechanism, timing, advantages and disadvantages.</p>
<p>Topic 6 Quick tests in the diagnosis of COVID-19</p> <p>Rapid tests in the diagnosis of COVID-19: relevance, methodology, interpretation.</p>
<p>Topic 7 Principles and approaches to the treatment of patients with COVID-19 in outpatient settings.</p> <p>Requirements for the organization of work of medical organizations and their structural units providing medical care on an outpatient basis aimed at preventing and preventing the spread of COVID-19. Rules for taking samples of biological material. Indications for providing medical care to patients with a positive COVID-19 test result at home. Principles of providing medical care in outpatient settings (at home) to patients diagnosed with COVID-19. Treatment of patients with COVID-19 at home. Caring for a patient with COVID-19 at home.</p>
<p>Topic 8 Principles and approaches to the treatment of patients with COVID-19 in inpatient settings.</p> <p>Indications for hospitalization in case of COVID-19. Actions of a healthcare professional in case of COVID-19 symptoms in a contact person who needs hospitalization.</p>
<p>Topic 9 Antiviral therapy and oxygen support for coronavirus infection</p> <p>Antiviral therapy and oxygen support for coronavirus infection.</p>
<p>Topic 10 Principles and approaches to the treatment of patients with COVID-19 in the intensive care unit</p> <p>Principles and approaches to the treatment of patients with COVID-19 in the intensive care unit. Indications for transfer to ICU. Features of patient management in the ICU. Equipment.</p>

Topic 11 Implementation of COVID-19 prevention measures aimed at the source of infection, the mechanism of transmission and the susceptible organism

The main types of measures for non-specific prevention of COVID-19. Recommendations for preventive measures to prevent the spread of COVID-19 cases. Stages of preventing or limiting the transmission of infection in healthcare facilities. Application of standard protective measures. COVID-19 prevention measures aimed at the susceptible population. Implementation of drip and contact precautions aimed at preventing infection.

Topic 12 Legal framework for implementing measures to prevent and combat the threat of COVID-19 spread

The impact of the coronavirus pandemic on socio-economic and labor rights. Legal framework for the implementation of measures to prevent and combat the threat of the spread of COVID-19.

Topic 13 Basic requirements for the organization of work of medical organizations providing outpatient care aimed at preventing the spread of COVID-19. Rules for taking samples of biological material

Requirements for the organization of work of medical organizations and their structural units providing medical care on an outpatient basis aimed at preventing and preventing the spread of COVID-19. Rules for taking samples of biological material.

Topic 14 Duties of a medical organization upon receipt of a positive result of laboratory testing of biological material for COVID-19

Responsibilities of a healthcare organization upon receipt of a positive laboratory test result for COVID-19. Selection of sectional material, compliance with anti-epidemic measures, transportation of samples.

Topic 15 The main tasks of medical organizations and their structural units that provide emergency, including specialized, medical care are aimed at preventing and preventing the spread of COVID-19

Basic requirements for the operation of medical organizations and their structural units providing emergency, including specialized, medical care aimed at preventing and preventing the spread of COVID-19. Methods to be implemented by healthcare facilities for early detection of infection cases.

Topic 16 LONG-COVID. Long-term consequences of coronavirus infection with symptoms of nervous system damage

The main clinical syndromes of nervous system damage in the acute period and after coronavirus disease. Pathogenetic mechanisms of these lesions. The massive proportion of nervous system lesions in the overall structure of diseases associated with COVID-19. Cognitive impairment and its role in quality of life.

Topic 17 LONG-COVID. Long-term consequences of coronavirus infection with symptoms of cardiovascular disease

The main clinical syndromes of cardiovascular disease in the acute period and after coronavirus disease. Pathogenetic mechanisms of these lesions. The massive proportion of cardiovascular system lesions in the overall structure of diseases associated with COVID-19. Endothelium and the role of the coagulation system in the development of cardiovascular lesions in coronavirus disease.

Topic 18 Final module control
Final assessment of knowledge and skills acquired

5. Intended learning outcomes of the course

After successful study of the course, the student will be able to:

LO1	Be able to collect medical information about the patient and analyze clinical data
LO2	Justify and define the necessary list of laboratory and instrumental tests and evaluate their results in COVID-19
LO3	Be able to determine the principles and nature of COVID-19 treatment and medical procedures
LO4	To carry out in practice the differential diagnosis of the main syndromes encountered in the emergency clinic in COVID-19
LO5	Be able to respond to key challenges (clinical and organisational) that arise during the COVID-19 pandemic.

7. Soft Skills

SS1	Ability to think abstractly, analyze and synthesize.
SS2	Ability to learn, master modern knowledge and apply it in practical situations.
SS3	Knowledge and understanding of the subject area and understanding of professional activities.
SS4	The ability to adapt and act in a new situation.
SS5	Ability to make informed decisions; teamwork; interpersonal skills.

8. Teaching and learning activities

<p>Topic 1. Acute respiratory diseases caused by coronaviruses. Etiological features of SARS-CoV-2</p> <p>pr.tr.1 "Acute respiratory diseases caused by coronaviruses. Etiological features of SARS-CoV-2" (full-time course)</p> <p>The main causative agents of acute respiratory diseases. Types of coronaviruses that cause SARS. Structure of the SARS-Cov2 virus, its strains. The concept of strains that are "of concern" (Variants of Concern).</p>
<p>Topic 2. Epidemiology, pathogenesis of COVID-19 disease development</p> <p>pr.tr.2 "Epidemiology, pathogenesis of COVID-19 disease development" (full-time course)</p> <p>Source of coronavirus infection, mechanisms of transmission, susceptible population. Prevalence and predominant strain. Mechanism of virus entry into the cell, target cells, levels of interaction with the immune system, pathogenetic mechanisms of clinical manifestations of the disease.</p>
<p>Topic 3. Classification, main clinical symptoms of coronavirus infection</p>

<p>pr.tr.3 "Classification, main clinical symptoms of coronavirus infection" (full-time course)</p> <p>Incubation period of COVID-19, features of the course. Main clinical symptoms of coronavirus infection. Difference in clinical course depending on the pathogen strain.</p>
<p>Topic 4. "Red flags" - symptoms of severe COVID-19</p>
<p>pr.tr.4 "Red flags" - symptoms of severe COVID-19" (full-time course)</p> <p>Features of severe course in patients with COVID-19. Main clinical symptoms and syndromes.</p>
<p>Topic 5. Principles and methods of laboratory diagnostics</p>
<p>pr.tr.5 "Principles and methods of laboratory diagnostics" (full-time course)</p> <p>The main three methods of diagnosing coronavirus infection. Rapid antigenic tests, serological tests for the detection of antibodies, molecular tests. Mechanism, timing, advantages and disadvantages.</p>
<p>Topic 6. Quick tests in the diagnosis of COVID-19</p>
<p>pr.tr.6 "Principles and approaches to the treatment of patients with COVID-19 in outpatient settings." (full-time course)</p> <p>Rapid tests in the diagnosis of COVID-19: relevance, methodology, interpretation</p>
<p>Topic 7. Principles and approaches to the treatment of patients with COVID-19 in outpatient settings.</p>
<p>pr.tr.7 "Principles and approaches to the treatment of patients with COVID-19 in outpatient settings." (full-time course)</p> <p>Requirements for the organization of work of medical organizations and their structural units providing medical care on an outpatient basis aimed at preventing and preventing the spread of COVID-19. Rules for taking samples of biological material. Indications for providing medical care to patients with a positive COVID-19 test result at home. Principles of providing medical care in outpatient settings (at home) to patients diagnosed with COVID-19. Treatment of patients with COVID-19 at home. Caring for a patient with COVID-19 at home.</p>
<p>Topic 8. Principles and approaches to the treatment of patients with COVID-19 in inpatient settings.</p>
<p>pr.tr.8 "Principles and approaches to the treatment of patients with COVID-19 in inpatient settings." (full-time course)</p> <p>Indications for hospitalization in case of COVID-19. Actions of a healthcare professional in case of COVID-19 symptoms in a contact person who needs hospitalization.</p>
<p>Topic 9. Antiviral therapy and oxygen support for coronavirus infection</p>
<p>pr.tr.9 "Antiviral therapy and oxygen support for coronavirus infection" (full-time course)</p> <p>Antiviral therapy and oxygen support for coronavirus infection. Principles of oxygen dosage, indications for prescription and rules of oxygen therapy.</p>
<p>Topic 10. Principles and approaches to the treatment of patients with COVID-19 in the intensive care unit</p>

pr.tr.10 "Principles and approaches to the treatment of patients with COVID-19 in the intensive care unit" (full-time course)

Principles and approaches to the treatment of patients with COVID-19 in the intensive care unit. Indications for transfer to ICU. Features of patient management in the ICU. Equipment.

Topic 11. Implementation of COVID-19 prevention measures aimed at the source of infection, the mechanism of transmission and the susceptible organism

pr.tr.11 "Implementation of COVID-19 prevention measures aimed at the source of infection, the mechanism of transmission and the susceptible organism" (full-time course)

The main types of measures for non-specific prevention of COVID-19. Recommendations for preventive measures to prevent the spread of COVID-19 cases. Stages of preventing or limiting the transmission of infection in healthcare facilities. Application of standard protective measures. COVID-19 prevention measures aimed at the susceptible population. Implementation of drip and contact precautions aimed at preventing infection.

Topic 12. Legal framework for implementing measures to prevent and combat the threat of COVID-19 spread

pr.tr.12 "Legal framework for implementing measures to prevent and combat the threat of COVID-19 spread" (full-time course)

The impact of the coronavirus pandemic on socio-economic and labor rights. Legal framework for the implementation of measures to prevent and combat the threat of the spread of COVID-19.

Topic 13. Basic requirements for the organization of work of medical organizations providing outpatient care aimed at preventing the spread of COVID-19. Rules for taking samples of biological material

pr.tr.13 "Basic requirements for the organization of work of medical organizations providing outpatient care aimed at preventing the spread of COVID-19. Rules for taking samples of biological material" (full-time course)

Requirements for the organization of work of medical organizations and their structural units providing medical care on an outpatient basis aimed at preventing and preventing the spread of COVID-19. Rules for taking samples of biological material.

Topic 14. Duties of a medical organization upon receipt of a positive result of laboratory testing of biological material for COVID-19

pr.tr.14 "Duties of a medical organization upon receipt of a positive result of laboratory testing of biological material for COVID-19" (full-time course)

Responsibilities of a healthcare organization upon receipt of a positive laboratory test result for COVID-19. Selection of sectional material, compliance with anti-epidemic measures, transportation of samples.

Topic 15. The main tasks of medical organizations and their structural units that provide emergency, including specialized, medical care are aimed at preventing and preventing the spread of COVID-19

pr.tr.15 "The main tasks of medical organizations and their structural units that provide emergency, including specialized, medical care are aimed at preventing and preventing the spread of COVID-19" (full-time course)

Basic requirements for the operation of medical organizations and their structural units providing emergency, including specialized, medical care aimed at preventing and preventing the spread of COVID-19. Methods to be implemented by healthcare facilities for early detection of infection cases.

Topic 16. LONG-COVID. Long-term consequences of coronavirus infection with symptoms of nervous system damage

pr.tr.16 "LONG-COVID. Long-term consequences of coronavirus infection with symptoms of nervous system damage" (full-time course)

The main clinical syndromes of nervous system damage in the acute period and after coronavirus disease. Pathogenetic mechanisms of these lesions. The massive proportion of nervous system lesions in the overall structure of diseases associated with COVID-19. Cognitive impairment and its role in quality of life.

Topic 17. LONG-COVID. Long-term consequences of coronavirus infection with symptoms of cardiovascular disease

pr.tr.17 "LONG-COVID. Long-term consequences of coronavirus infection with symptoms of cardiovascular disease" (full-time course)

The main clinical syndromes of cardiovascular disease in the acute period and after coronavirus disease. Pathogenetic mechanisms of these lesions. The massive proportion of cardiovascular system lesions in the overall structure of diseases associated with COVID-19. Endothelium and the role of the coagulation system in the development of cardiovascular lesions in coronavirus disease.

Topic 18. Final module control

pr.tr.18 "Final module control" (full-time course)

Final assessment of knowledge and skills acquired

9. Teaching methods

9.1 Teaching methods

Course involves learning through:

TM1	Case-based learning
TM2	Team Based Learning
TM3	Project training
TM4	Self-study
TM5	Electronic learning

The discipline is taught using modern teaching methods (CBL, TBL), which contribute not only to the development of professional skills, but also stimulate creative thinking

Students acquire soft skills throughout the entire period of studying the discipline. The ability to

analytical and critical thinking, teamwork, and perseverance is formed during team-, practice-, and case-based learning. E-learning stimulates the ability to use information technology.

9.2 Learning activities

LA1	Performing a group practical task
LA2	Performing practical tasks
LA3	Participation in discussions (group and pair)
LA4	E-learning in systems such as Google Meet, Viber, Telegram, MIX learning, Zoom, and YouTube channel
LA5	Preparation for current and final control
LA6	Solving situational tasks
LA7	Self-learning
LA8	Analysis of clinical cases

10. Methods and criteria for assessment

10.1. Assessment criteria

Definition	National scale	Rating scale
Outstanding performance without errors	5 (Excellent)	$170 \leq RD \leq 200$
Above the average standard but with minor errors	4 (Good)	$140 \leq RD < 169$
Fair but with significant shortcomings	3 (Satisfactory)	$120 \leq RD < 139$
Fail – some more work required before the credit can be awarded	2 (Fail)	$0 \leq RD < 119$

10.2 Formative assessment

	Description	Deadline, weeks	Feedback
FA1 Peer assessment	Partnership interaction aimed at improving learning outcomes by comparing one's current level of performance with previous indicators. Provides an opportunity to analyze your own educational activities	During the entire period of studying the discipline	Adjusting teaching approaches together with students based on assessment results

<p>FA2 Summative testing</p>	<p>A method of effective testing of the level of knowledge, skills and abilities in a discipline. Testing allows you to check the learning outcomes upon completion of the discipline.</p>	<p>At the last class in the discipline.</p>	<p>The maximum number of points for the test is 20 points, provided that 100% of the answers are correct. The minimum score for successful completion of the tests is 12 points (60% of correct answers)</p>
<p>FA3 Teacher's instructions in the process of performing practical tasks</p>	<p>The guidelines describe methods of pedagogical control over the professional activities of students. Efficiency is determined by compliance with all stages of practical tasks. The effectiveness of the formation of the necessary practical skills depends on the level of practical competence.</p>	<p>During the entire period of studying the discipline</p>	<p>Counseling students in working with a standardized patient, direct and indirect observation of the work of applicants near the "patient" with further determination of the level of practical training</p>
<p>FA4 Survey and oral comments of the teacher on its results</p>	<p>It makes it possible to identify the state of students' learning experience in accordance with the set goals, find out the prerequisites for the state of formation of the results obtained, the causes of difficulties, adjust the learning process, track the dynamics of learning outcomes and predict their development.</p>	<p>During the entire period of studying the discipline</p>	<p>According to the obtained data on learning outcomes, based on their analysis, it is proposed to determine the grade as an indicator of the achievements of students' learning activities</p>

<p>FA5 Solving clinical cases</p>	<p>The case method allows to reveal and form the qualities and abilities of medical students necessary for their future work, develops clinical thinking, analytical skills, independence in decision-making, communication skills, and skills of working with a sufficiently large amount of information.</p>	<p>During the entire period of studying the discipline</p>	<p>Assessment of the student's ability to think clinically, justify their decisions, clearly express their thoughts, determine the level of theoretical training, which is reflected in the appropriate assessment</p>
<p>FA6 Tests (automated tests) to monitor students' academic achievements</p>	<p>A method of effectively checking the level of knowledge, skills and abilities on each topic of the discipline. Testing allows you to check the mastery of educational material on each topic.</p>	<p>During the entire period of studying the discipline</p>	<p>The student must provide 60% of the correct answers, which is an admission to the practical part of the class</p>
<p>FA7 Tasks of assessing the level of theoretical training</p>	<p>Assessment of the acquired theoretical knowledge on the subject matter of the discipline. It is carried out at each practical lesson in accordance with the specific objectives of each topic on the basis of a comprehensive assessment of student performance, including control of the level of theoretical training, independent work according to the thematic plan</p>	<p>During the entire period of studying the discipline</p>	<p>Feedback is aimed at supporting students' independent work, identifying shortcomings and assessing the level of acquired theoretical knowledge.</p>
<p>FA8 Focus group discussions</p>	<p>The method allows all participants to engage in the process of discussing and justifying their own opinions through multilateral communication, develop the ability to conduct a professional discussion, cultivate respect for colleagues and the ability to generate alternative ideas and proposals.</p>	<p>During the entire period of studying the discipline</p>	<p>Оцінка здатності студента до роботи в команді, вміння обґрунтувати свої рішення, визначення рівня теоретичної підготовки, що відображається у відповідній оцінці</p>

10.3 Summative assessment

	Description	Deadline, weeks	Feedback
SA1 Oral questioning	The level of theoretical training is determined	During the entire period of studying the discipline	It is conducted at each lesson, the result of the performance of the assignment affects the comprehensive grade for the practical lesson
SA2 Assessment of the level of theoretical training	It develops students' skills of independent work, encourages them to seek searching knowledge. Stimulates students to work with the necessary literature, transfers the learning process from the level of passive absorption of information to the level of active transformation	During the entire period of studying the discipline	Conducted at each lesson, the result of the implementation of the LA affects the comprehensive grade for the practical lesson
SA3 Final control: differentiated credit	Passing a differentiated test. Applicants who have attended all previous classes, successfully mastered the material in the discipline and have passed the practical skills are allowed to take the test.	According to the schedule	An applicant can receive 80 points based on the results of the test. The minimum number of points a student must receive is 48 points

Form of assessment:

		Points	Можливість перекладання з метою підвищення оцінки
The first semester of teaching		200 scores	
SA1. Oral questioning		103	
		103	No
SA2. Assessment of the level of theoretical training		17	
		17	No
SA3. Final control: differentiated credit		80	
		80	No

When mastering the module materials, a student is assigned 7 points for each practical lesson on topics 1-7 and 9-17, and 8 points for topic 8. Final module control, including: theoretical training - 60 points, computer testing - 20 points. The final module control is conducted according to the schedule at the end of the cycle. The grade for the final module control is assigned in the traditional 4-point grading system with subsequent conversion to points, with a grade of "5" corresponding to

80 points, "4" - 64 points, "3" - 48 points, "2" - 0 points. The final module control is credited to the student if he or she has scored at least 48 out of 80 points. The total score in the discipline may not exceed 200 points.

11. Learning resources

11.1 Material and technical support

MTS1	Information and communication systems
MTS2	Library collections
MTS3	Graphic materials (drawings, blueprints, maps, diagrams, posters, etc.)
MTS4	Multimedia, video and sound reproduction, projection equipment (video cameras, projectors, laptop screens)
MTS5	Sumy State University Clinic, Krasovitsky Infectious Diseases Hospital
MTS6	Medical equipment, biomedical products and materials, laboratory equipment and instruments
MTS7	Modern diagnostic, therapeutic and other devices, items and instruments for professional medical activities
MTS8	Computers, computer systems and networks
MTS9	Software (to support distance learning)

11.2 Information and methodical support

Essential Reading	
1	https://www.msmanuals.com/professional/infectious-diseases/covid-19/covid-19
2	https://www.covid19treatmentguidelines.nih.gov
3	https://www.cdc.gov/coronavirus/2019-nCoV/index.html
Supplemental Reading	
1	Randhawa GS, Soltysiak MPM, El Roz H, de Souza CPE, Hill KA, Kari L. Machine learning using intrinsic genomic signatures for rapid classification of novel pathogens: COVID-19 case study. <i>PLoS One</i> . 2020 Apr 24;15(4):e0232391. doi: 10.1371/journal.pone.023239
2	Harrison AG, Lin T, Wang P. Mechanisms of SARS-CoV-2 Transmission and Pathogenesis. <i>Trends Immunol</i> . 2020 Dec;41(12):1100-1115. doi: 10.1016/j.it.2020.10.004.
3	Choi JY, Smith DM. SARS-CoV-2 Variants of Concern. <i>Yonsei Med J</i> . 2021 Nov;62(11):961-968. doi: 10.3349/ymj.2021.62.11.961.
4	Silva Andrade B et al. Long-COVID and Post-COVID Health Complications: An Up-to-Date Review on Clinical Conditions and Their Possible Molecular Mechanisms. <i>Viruses</i> . 2021 Apr 18;13(4):700. doi: 10.3390/v13040700. PMID: 33919537; PMCID: PMC8072585.
Web-based and electronic resources	

1	https://www.washingtonpost.com/health/how-the-new-coronavirus-differs-from-sars-measles-and-ebola/
2	https://www.medscape.com/viewarticle/924571.
3	https://www.dec.gov.ua/mtd/koronavirusna-hvoroba-2019-covid-19/
4	https://www.nihr.ac.uk/covid-19/researching-the-long-term-impact.htm
5	https://pubmed.ncbi.nlm.nih.gov/35198136/