PRIVATE HIGHER EDUCATIONAL ESTABLISHMENT
«INTERNATIONAL ACADEMY OF ECOLOGY AND MEDICINE»

Department of fundamental disciplines with a course of pharmacology

SYLLABUS OF THE EDUCATIONAL DISCIPLINE

"Forensic medicine"

LEVEL OF HIGHER EDUCATION The second (master's) level
DEGREE OF HIGHER EDUCATION Master
AREA OF KNOWLEDGE 22 "Health care"
SPECIALTY 221"Dentistry"

Reviewed and approved
at the meeting of the Department of fundamental disciplines with a course of pharmacology

Protocol № _1_ of «_01_» ___09___ 2020
Head of the department Doctor of Biological Sciences, associate professor
_____M.R. Vergolyas

Kiev 2020

1. General information	
Subject	**Forensic medicine**
Lector	Ph.D. K. Varukcha
Teacher's contact phone number	095 737-00-03
Teacher's e-mail	k.varukhasme@gmail.com
Discipline format	Normative discipline.
The volume of the discipline	45 hours
Link to the distance learning site	maem.kiev.ua
Consultations	Tuesday of each week 16.00-17.30
2. Annotation to the course	
The subject of study of the discipline: Forensic science is a branch of science that studies the issues of medical, biological and medical forensic nature that arise in the practical work of justice. Modern forensic science has gone far beyond applied knowledge. Its separate sections are designed in accordance with criminal and civil law and are only taught in forensic medicine. The need to have a sound knowledge of the theory and practice of forensic medicine is conditioned by the fact that, according to the current legislation, law enforcement agencies have the right to involve in the expert functions of a doctor of any specialty, regardless of the faculty in which he received medical education. In this regard, forensic knowledge is important for any physician who, when necessary, should correctly apply it in practice.	**Interdisciplinary links-** discipline is based on the study by students of medical biology, normal and pathological physiology, microbiology, medicinal chemistry, pharmacology, clinical disciplines, laboratory and functional diagnostics and integrates with these disciplines.
3. Purpose and objectives of the course	
The main tasks of studying the discipline are: - to provide knowledge about modern possibilities of forensic medical examination and structure of forensic medical service, and also functions of bureau and its divisions; - to provide knowledge about the organizational and procedural principles of forensic examination; - to teach students to diagnose the fact of biological death of a person; - to learn to describe injuries; - to learn to determine the type of injury and the mechanism of its occurrence; - to learn to use criteria to determine the severity of injury;	**The purpose** of teaching the discipline "Forensic medicine"consistent with objectives of the educational-professional training program for applicants for the second educational (master's) level of higher education and are determined by the content of those systemic knowledge and skills that must be mastered by a doctor. The knowledge that students receive from the discipline " Forensic medicine" is basic for the block of disciplines that provide scientific and professional training.

- to know the requirements that must be met when removing physical evidence of biological origin.	

4. Competencies and learning outcomes

As a result of studying the discipline students must

know:

• up-to-date scientific data and forensic capabilities;

• Provisions of the current legislation on forensic examination, duties, rights and responsibilities of medical professionals for professional offenses, as well as the basic laws that regulate the activities of medical professionals.

be able to:

• work independently with the legislation of Ukraine and international and regional standards in the field of health care; to know the mechanisms of exercising the rights and obligations of the subjects of medical legal relations; prepare the necessary legal documents; to analyze the legal nature of certain types of medical practice; to apply the practice of law for law enforcement activities, incl. the legal positions of the European Court of Human Rights; make effective use of an arsenal of expertise and quality control mechanisms for health care; correctly evaluate the consequences of the professional activities of medical and pharmaceutical workers.

• carry out forensic examination of the victim;

• inspect the corpse on the scene;

• identify the causes of death during forensic examination of the corpse in cases of violent and non-violent death.

In accordance with the requirements of the Standard of higher education discipline provides for students ' acquisition of ***competencies:***

Integrated: ability to solve common and complex specialized tasks and practical problems in the process of learning that involves the research and/or implementation of innovation and is characterized by complexity and uncertainty of conditions and requirements

General:

- knowledge and understanding of the discipline "Forensic medicine";
- ability to apply knowledge of forensic medicine and medical law of Ukraine in practical situations;
- ability to select a strategy of communication;
- ability to work in a team;
- interpersonal skills;
- ability to communicate in the state language, both orally and in writing;
- ability to communicate in another language;
- skills in using information and communication technologies;
- ability for abstract thinking, analysis and synthesis, capacity to learn and to be trained modern;
- ability to evaluate and ensure the quality of work performed;
- certainty and persistence regarding tasks and responsibilities taken.

Special (professional):

- to know the conceptual-categorical apparatus in the field of medical law; the sources of medical law;
- to know the types of legal liability for offences in the sphere of health care; legal practice in the areas of health law, including the European court of human rights;
- ability to assimilate legal conditions for the execution of certain types of medical practices and their legal regulation;
- ability to assess trends in rule-making and public policy in the field of health;
- ability to analyze defects of rendering of medical aid, their legal qualification.

Matrix of competencies

№	Competence	Knowledge	Skills	Communication	Autonomy and responsibility
1	2	3	4	5	6
General competence					
Ability to apply knowledge of forensic medicine and medical law of Ukraine in practical situations					
Special competencies					
1.	Ability to evaluate the results of forensic examination.	Modern scientific data and possibilities of forensic examination; provisions of the current legislation on forensic examination.	To make a forensic medical examination of the victim. To make forensic medical examination based on the materials of investigative or court cases and draw up a document.	To communicate with the relatives of the victim correctly.	To be responsible for deciding on legal liability for health care.
2.	Ability to reasonably assess the results of the severity of injuries during the examination of victims, accused and others.	Procedure for forensic medical examination of victims, accused and other persons.	To evaluate the results of the severity of injuries during the examination of victims, accused and others. To establish the mechanism of prescription and survival of the injury. To describe the damage and diagnose the action of blunt, sharp objects, vehicles and firearms by their characteristic properties.	To communicate with the victim correctly.	To be responsible for deciding on legal liability for health care.

5. Organization of course training

The volume of the course

Type of lesson	***Total amount of hours 45***
Lectures	10
Practical classes	20
Independent work	15

Course signs

Semesters: the 5th	Specialty 221"Dentistry"	Course (year of study) : the 3rd	Normative discipline

Course thematics

The program of the discipline is structured into Module 1: Forensic Medicine.

SPECIFIC GOALS:

• To analyze the stages of development of domestic forensic medicine, the contribution of individual scientists at each stage.
• To explain the principles of forensic organization in the country.
• To know the function of the structural units of the Forensic Bureau
• To analyze the legal support for medical activities.
• To interpret the legal rules regarding the appointment and conduct of forensics.
• To know the legal regulations governing the activities of healthcare professionals and legal relationships in the healthcare sector and be able to analyze them.
• To know the causes of adverse effects in medical practice, medical errors, accidents.
• To be able to characterize and evaluate the offenses of healthcare professionals.
• To be able to state the fact of biological death.
• To conduct a forensic dissection of the corpse, to formulate the cause of non-violent death and to issue a "Medical Certificate of Death".
• To know the peculiarities of forensic examination of a corpse of a newborn and a dying person.
• Review the corpse at the scene of the event, find, describe and remove material evidence of biological origin.
• To be able to describe the material evidence of biological origin, especially the traces of blood at the scene.
• To know the rules for removing material evidence of biological origin from their location.
• To formulate issues that can be resolved during forensic examination of physical evidence of biological origin.
• To be able to carry out a personal injury examination.
• To be able to describe injuries.
• To determine the severity of personal injury, the percentage of loss of overall performance.
• To know the specifics of forensic examination regarding disputable sexual acts and sexual offenses.
• To be able to determine the type of personal injury.
• To be able to describe bodily injuries resulting from mechanical factors.
• To be able to identify the cause of a violent death and write a 'Medical Certificate of Death'
• To formulate issues that can be resolved during forensic examination of a corpse in cases of death from blunt objects.
• To be able to diagnose and evaluate the damage inherent in different types of transport injuries.
• To formulate section diagnosis in cases of transport injury.
• To draw and justify conclusions in typical cases of car, rail and motorcycle injuries.
• To formulate issues that can be resolved during forensic examination of the corpse in cases of death from sharp objects.
• To describe fire damage to clothing, skin, bones and internal organs.
• To diagnose gunshot distance and wound canal direction.

THEMES OF LECTURES
The 5th semester

№	Theme	Amount of hours
	MODULE 1. FORENSIC MEDICINE	
1.	The subject and objectives of forensic medicine. The history of its development, the procedural and organizational foundations of forensic	2

	medical examination. Medical legislation in the system of medical knowledge.	
2.	Forensic thanatology. The basics of transplantology. Inspection of a corpse at the scene.	2
3.	Forensic medical examination of victims, accused and other persons. Forensic examination of injuries and death from mechanical factors. Damage from the action of blunt objects. Traffic injury.	2
4.	Forensic examination of injuries and death from mechanical factors. Damage by sharp objects. Gunshot injury: forensic examination and diagnosis.	2
5	Forensic examination of injuries from biological factors. Poisoning by different groups of poisons.	2
	Total	**10**

THEMES OF PRACTICAL LESSONS
The 5th semester

№	Theme	Amount of hours
	MODULE 1. FORENSIC MEDICINE	
1.	Procedural and organizational basis of forensic examination and forensic dentistry in Ukraine. Forensic medical thanatology."	3
2.	Forensic examination of the physical evidence of biological origin. Forensic medical and criminalistics methods of examination.	3
3.	Forensic medical (dental) examination of establishing the severity of injuries, health status and age.	3
4.	General questions of forensic traumatology. Blunt force trauma. Forensic justification for mechanism of injury and the cause of death from the effects of blunt objects. Injuries of the oral mucosa and teeth. Injuries caused by teeth. Fractures of the facial bones. Falls from height (katatrauma).	3
5.	Sharp force trauma.	3
6.	Forensic medical examination of sudden and unexpected death. Autopsy.	3
7	Finale control.	2
	Total	**20**

THEMES OF INDEPENDENT WORK OF STUDENTS
The 5th semester

№	Theme	Amount of hours
	MODULE 1. FORENSIC MEDICINE	
	Preparation for practical classes.	5
1.	Forensic medical examination of mechanical asphyxia. Strangulation. Suffocation. Obstruction. Compression. Forensic medical examination of drowning.	1
2.	Forensic medical thanatology.	1
3.	Forensic medical examination of the corpse of newborn. Infanticide due to commission and omission.	1

4.	Forensic medical examination of injury due to the action of high and low temperature.	1
5.	Forensic medical examination of injury due to action of electricity.	1
6.	Forensic autopsy. Determining the time of death.	1
7.	General information about poisons, mechanism of action and the basis of forensic medical diagnosis of poisoning.	1
	Preparation befor Finale control.	3
	Total	**15**

6. Course evaluation system

General course evaluation system	**Current control** is performed based on the control of theoretical knowledge, skills and abilities in practical classes. Independent study students are assessed in practical classes, and is an integral part of the final grade of the student. Current control is performed during the training sessions and aims at checking the assimilation of students learning the material. Forms of current control are: a) test tasks with a choice of one correct answer, with the definition of the correct sequence of actions, with determination of the conformity, defining the specific portion of the photo or diagram ("detection"); b) individual oral questioning, interview; c) the solution of typical situational tasks; g) identification of pathogens and carriers of pathogens of parasitic diseases in the photographs, macro - and micropreparats; d) control of practical skills; e) the typical problems of genetics and medical genetics. Grades on the national scale ("excellent" - 5, "good" - 4, "satisfactory" - 3, "unsatisfactory" - 2), received by students, are displayed in the journals of attendance and academic group performance. **Final control** The final control is the form of a differentiated credit at the end of the 1st semester and an exam at the end of the 2nd semester upon completion of the course of medical biology. The semester exam is a form of final control of mastering by the student of theoretical and practical material on academic discipline. The final control (exam) is carried out at the last control lesson. Students are admitted to the FC who have attended all the classes provided by the curriculum in the discipline and while studying the module scored the number of points not less than the minimum (**72 points**). A student who, for good or bad reasons, has missed classes, is allowed to rework academic debt for a certain period of time.

Evaluation of current educational activities. During the assessment of mastering each topic for the current educational activity of the student scores are set on a 4-point (national) assessment scale. This takes into account all types of work provided by the discipline program. The student must receive a score on each topic. Scores on the traditional scale are converted into points. The final assessment of the current academic activity is the arithmetic mean (the sum of scores for each lesson is divided by the number of lessons per semester) and translated into points according to **Table 2.**

Table 2. Conversion of the average score for the current activity into a multi-point scale (for disciplines completed by diff.credit, exam)

4-point scale	120-point scale	4-point scale	120-point scale	4-point scale	120-point scale	4-point scale	120-point scale
5	120	4,45	107	3,91	94	3,37	81
4,95	119	4,41	106	3,87	93	3,33	80
4,91	118	4,37	105	3,83	92	3,29	79
4,87	117	4,33	104	3,79	91	3,25	78
4,83	116	4,29	103	3,74	90	3,2	77
4,79	115	4,25	102	3,7	89	3,16	76
4,75	114	4,2	101	3,66	88	3,12	75
4,7	113	4,16	100	3,62	87	3,08	74
4,66	112	4,12	99	3,58	86	3,04	73
4,62	111	4,08	98	3,54	85	3	72
4,58	110	4,04	97	3,49	84	<3	Not enough
4,54	109	3,99	96	3,45	83		
4,5	108	3,95	95	3,41	82		

The maximum number *of points that a student can collect for current educational activity during semester in order to be admitted to the exam is* ***120 points.***

The minimum number *of points that a student can collect for current educational activity during semester in order to be admitted to the exam is* ***72 points.***

Calculating of the number of points is based on obtained marks of student according to traditional scale while learning subject during the semester, by calculating the arithmetic mean (AM) that is rounded to two signs after comma.

Evaluation of independent work of students. Independent work of students, which is provided by the topic of the lesson together with the classroom work, is evaluated during the current control of the topic in the relevant lesson. Assimilation of topics that are submitted only for independent work is checked during the final module control.

Evaluation of final control.

The maximum number of points that a student can score during the exam is **80 points.**

The final control is considered credited if the student scored at least 60% of the maximum amount of points (for a 200-point scale - at least **50 points**).

Determining the number of points that a student scored in the discipline: the number of points that a student scored in the discipline is defined as the sum of points for the current academic activity (Table1) and for the final control (diff.credit, exam) (Table 3).

Table 3. Scale of assessment of differentiated (exam) credit:

Traditional scale	Points
«5»	**70-80**
«4»	**60-69**
«3»	**50-59**

Requirements for written work	The final written work is performed in the form of a test.
Practical classes	Classroom work

The 3rd course. The Vth semester

MODULE 1. FORENSIC MEDICINE

Topics 1-6:
Classroom work - score from 2 to 5 for each topic.

Topic 7: Diff.credit (Semester control): practical training, theoretical training.
Final module control1 is evaluated from 50 to 80 points and consists of:
3 theoretical questions and 1 situational task.

THE CRITERIA FOR EVALUATION
PRACTICAL SKILLS AND THEORETICAL QUESTIONS

Number of Situational task	«5»	«4»	«3»	The answer a card to the practical skills	For each answer to the practical skill student receives from 10 to 16 points: «5» - 16 points; «4» - 13 points; «3» - 10 points.
1	16	13	10		
Number of Theoretical question	«5»	«4»	«3»	Oral answer the card on theoretical questions	For each answer to the practical skill student receives from 10 to 16 points: «5» - 16 points; «4» - 13 points; «3» - 10 points.
1	16	13	10		
2	16	13	10		
3	16	13	10		
The sum of points	**80**	**65**	**50**		

Students who have completed all types of work provided by the curriculum and scored the number of points for the current success not less than the minimum (72) are admitted to the exam. The total grade for the module and the discipline consists of a total grade for the activities in the current classes and the final control of student knowledge. Current activity is estimated from 72 to 120 points. Thus, the minimum number of points per module should be: **72 + 50 = 122** points. Maximum number: **120 + 80 = 200** points.

Rating scale:

National scale	Points scale
«5»	70-80
«4»	60-69
«3»	50-59

LIST OF THEQUESTIONS FOR DIFF.CREDIT

1. Forensic medical examination and it types. Duties, tasks and responsibilities of the forensic medical examiner.
2. Medico-legal systems in the world.
3. Structure of the medical serves in Ukraine. Bureau of the forensic medical expertise, subsections.
4. Definition of the "thanatology". Cellular and somatic death.
5. Forensic medical examination of the dead body.
6. Death. Classification.
7. Pathophysiology of dying.
8. Forensic medical significance of the terminal stage of dying. Clinical and biological death.
9. Application of the organs and tissues for the corpses for transplantation.

Legal, ethical and medical aspects of transplantation.

10. Diagnostic criteria for determination of the brain death.
11. Euthanasia.
12. Cause, mechanism and manner of death.
13. Plausible and absolute signs of death. Early changes after death.
14. Late changes after death. Natural conservation of the body.
15. How to "read" nommogram?
16. Forensic medical determination of the time of death. Supravital reaction.
17. Sudden death. Definition and signs.
18. Risk factors of sudden death.
19. Diagnostics of the death from cardiovascular disease.
20. Diagnostics of the death from respiratory system disease.
21. Diagnostics of the death from disease of the digestive system, central nervous system, the genitourinary system.
22. Sudden death of the children. Sudden Infant Death Syndrome.
23. The estimation of maturity of a newborn baby or fetus.
24. Procedural position and organization of forensic autopsy.
25. General rules, procedures and phases of the forensic autopsy.
26. Forensic medical records, which is filled during and after the autopsy.
27. Death certification.
28. Examination of the death or crime scene.
29. Duties of a specialist in forensic medicine at the examination of the corpse at the death or crime scene.
30. The methods of determination of the time of death at the death or crime scene.
31. Forensic medical capabilities of the identification an unknown person.
32. The value of the dental status for the identification an unknown person.
33. Identification by DNA profiling
34. Examination of the dead body of the newborn.
35. Medico-legal questions in case of the examination of the dead body of the newborn.
36. What is infanticide? What are the risky factors of SIDS?
37. Causes of death of the newborn.
38. Forensic medical examination of the living persons.
39. Forensic medical examination in case of the sexual assault.
40. The concept of "injury." Classification of injuries, types of injuries. Questions that resolve with mechanical trauma. Mechanism of action of a blunt object on the human body.

41. Abrasion and contusion. Their forensic medical significance.
42. Bone fractures. Their forensic medical significance.
43. Laceration. Characteristics, definition and signs.
44. Self-inflicted injuries.
45. Railway trauma.
46. Transport trauma. Injures in case of road accident.
47. Stab wounds. Self-inflicted injures.
48. Chop and incised wounds. Differences. Dependence from manner of death .
49. Questions what are resolved in case of stab, incised, chop wounds.
50. The main causes of death in cases of mechanical trauma.
51. Classification of the firearm weapon.
52. Components of the ammunition, mechanism of the shot.
53. Gunshot residue.
54. Kinetic energy of the projectile.
55. Specifics of the contact wounds.
56. Specifics of the intermediate distance wounds.
57. Specifics of the distant wounds.
58. Exit gunshot wounds.
59. Specifics of the shotgun wounds. Structure of the shotgun cartridge.
60. Medici-legal aspects pregnancy and abortion.
61. Examination of the scene in case of criminal abortion.
62. Causes of death in case of criminal abortion.
63. Asphyxia. Definition and classification.
64. Signs of asphyxia.
65. Hanging and ligature asphyxia.
66. Manual asphyxia. Gaging. Smothering.
67. Drowning.
68. Poison. Definition. Ways of the poison entering in the body.
69. The toxic and fatal dose.
70. Tolerance and idiosyncrasy.
71. Corrosive poison. Poisoning of the acids and alkalines.
72. Forensic medical diagnosis of poisons that form methemoglobin.
73. Poisoning with carbon monoxide.
74. Poisoning with arsenic, thallium.
75. Poisoning with sleeping pills.
76. Poisoning with ethyl alcohol and its surrogates.
77. Poisoning with cyanide compounds.
78. Agrochemical poisons.
79. Strychnine poisoning, atropine.
80. Poisoning with drugs (morphine, heroin, opium, cocaine, narcotic mushrooms).
81. Rules of the removal of internal organs for forensic toxicological studies and evaluation of their results.
82. Local effects of the heat on the body. Features of burns caused by various factors. Scalding.
83. General effect of high temperatures, overheating and sunstroke.
84. The local effect of cold. The degree frostbites and their morphological characteristics.
85. General effect of epy low temperature. Signs of death from hypothermia.

86. Features of action of electricity on the human body.
87. Forensic examination of the lesions with technical electricity.
88. Electrical lesion.
89. Death from lightning.
90. Forensic medical examination of blood.
91. Forensic medical examination of saliva, urine, sperm.
92. Forensic medical examination of hair.

Circumstance of admission to the final control	1. Semester control at the end of the 1st semester is provided in the form of a differential credit. (Table 2) Provides a final score on a 120-point scale as the sum of scores for the current control of knowledge (oral examination, written survey, tests, verification of identification of micropreparations, abstracts), the results of 2 content modules. 2. Students are allowed to take the differentiated credit, exam only if there is no debt for the implementation of the curriculum.

7. Course policy

The organization of the educational process is carried out with the use of the European Credit Transfer System (ECTS) to assess student performance. The points gained in the current survey, independent work and points of the final control are credited. This must take into account the student's presence in class and his activity during practical work. Inadmissible: absences and late classes; use of a mobile phone, tablet or other mobile devices during the lesson (except for the cases provided by the curriculum and methodical recommendations of the teacher); copying and plagiarism; untimely performance of the task, the presence of unsatisfactory grades for 50% or more of the submitted theoretical and practical material.

8. RECOMMENDED LITERATURE

Basic:

1. DiMaio V. Forensic Pathology, 2nd ed. / V. DiMaio, D. DiMaio // Practical aspects of criminal and forensic investigation, Boca Raton, London, New York, Washington, D.C.: CRC Press, 2001, p.562.
2. Richard Shepherd - Simpson's Forensic Medicine/Twelfth Edition Senior Lecturer in Forensic Medicine Forensic Medicine Unit St George's Medical and Dental School Tooting, London, UK, 2003, p. 198.
3. Longauer A., Bobrov N., Labaj P. Practicing in forensic medicine, Faculty of Medicine, P. J. Safarik University Kosice, Slovak Republic, 2000, p.98.
4. Eckert, William G. Introduction to forensic sciences. / William G. Eckert second editon. - New York: Elsevier, 1992. – P. 385

Additional:

5.Color Atlas of Forensic Medicine and Pathology -Edited by Charles A. Catanese, USA, 2009, p. 424.;
6.Color Atlas of the autopsy / Scott A. – Wagner Boca Raton London New York Washington, 2004, p. 226.
7.DiMaio V. J. M. Gunshot wounds. Practical aspects of firearms, ballistics, and forensic techniques. Second Edition / Vincent J. M. DiMaio. – CRS Press: New York, - 1999. – 400p.

Lector _____ **Ph.D. K. Varukcha.**