

**MINISTRY OF HEALTH IN UKRAINE
DANYLO HALYTSKYI LVIV NATIONAL MEDICAL
UNIVERSITY
Department of Pathological Anatomy and Forensic Medicine**

CONFIRM
Firs
st Vice-Rector for
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_____||_____2023

**EDUCATIONAL PROGRAM
in
«Forensic Medicine»**

for 3rd year students by specialty “Dentistry”
for preparation of specialists of the second (master’s degree) level of
higher education

**OK25.2
area of knowledge 22 «Public Health»
speciality 221 «Dentistry»**

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Chief of the Department
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Confirmed
by profile Methodological Committee
in medical and biological subjects
protocol № 2 from 23.03.2023

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INTRODUCTION

**the education program of Forensic Medicine (Dentistry)
according to the academic standart of the second
(master's) leveleducation sector 22 "Public Heath"
speciality 221 "Dentistry"
education program of Master of Dentistry**

The Description of the Subject (Summary)

Forensic medicine is an independent educational medical discipline that studies and solves medical and biological problems that arise in investigative and judicial practice in the investigation of crimes (criminal proceedings) committed against the life and health of the individual. Forensic medicine is an independent science, which is a set of medical, biological and other knowledge, creatively processed and aimed at solving problems of justice and health care.

Forensic medicine:

- A. Based on knowledge, which students got from other commonly biological and clinical subjects.
- B. Give knowledge, which help to do the function of specialist in the field of forensic medicine.
- C. Give knowledge how to estimate the moment of death, to describe corpse in a place where it was revealed, to describe injuries, to find and describe material evidence of biological origin.
- D. Give knowledge about professional and official offences of medical workers.

2. STRUCTURE OF THE DISCIPLINE "Forensic medicine (Dentistry)" and charging points for current educational activity (converting of traditional estimations in marks; estimation in marks for implementation of individual tasks, if it is foreseen by a current educational curriculum).

The distribution of the educational process

Structure of educational discipline	Amount of hours, from them				Academic semester	Type of control
	Totally	Auditorial		IOCSW		
		Lectures	Practical classes			
Forensic medicine (Dentistry)	30 hours (1 - credits ECTS)	-	15	15	3 year (V Semester)	Credit

Note: 1 credit ECTS - 30 hours. Audit load - 50 %, SPES - 50 %.

Object of the substest's studding

Forensic medicine and its practical part (forensic-medical examination) is a science, which is an accumulation of the medical, biological and other knowledge, which transformed and turned on the solving of problems of justice and health protection.

Examination is prescribed during the inquest, forehead inquiry, during the judicial trial, when special knowledge of science, technique, art and craft are required. Examination is performed by the experts of appropriate institutions or other specialists, which were assigned by the person, which perform the inquest, investigator, public prosecutor or by the judge. Expert is the person who possesses the appropriate knowledge to make the examination.

Among the all examinations only the forensic-medical examination has the state structure, what determines the especial importance of the person in the legislation system and care of its health and dignity of individuality.

The specialist, who has the medical education, can be involved in the forensic-medical

examination. During this work, such person is considered the expert by the procedural condition (Decree of the Ministry of the Health Care of the Ukraine # 6 from 17.01.1995)

According to the laws of our country, there is no difference, what faculty the doctor, who involved in the forensic-medical examination, has graduated from. The choosing of the doctor-expert does not depend on the period of the practical work, specialty, post etc. That's why the level of knowledge and practical skills of the students should be equal, not depending on the specialty of the future doctor. That's why the only program of the forensic medicine for the students of medical, pediatrics and stomatology faculties is necessary.

Each doctor should receive the knowledge of main themes of the forensic medicine and ability to apply him or her on practice.

Except this, the duty of the doctor-forensic-expert is to improve the quality of the health care of the population in our country, using all means to decrease the illness rate and lethality.

That's why the main purpose of the studying of forensic medicine and medical legislation is to prepare the doctor of general profile, who is able to perform the duties of the forensic-medical expert, solve the tasks of investigatory authorities and improve the system of health protection and treatment-prophylactic care.

Interdisciplinary Relations

Student should learn the course of all theoretic and clinical disciplines in medical university, first of all pathological anatomy and traumatology, to study the forensic medicine and medical legislation.

List of the disciplines and their structural parts (themes), which students should study

Discipline	Should know	Should be able to do
Anatomy Topographic anatomy	Anatomical structure of the human body, topography of the internal organs	Determine the localization of the injuries according to the two anatomical oriental points
Pathological anatomy	Signs of reactive inflammation	
Surgery	Morphological signs of the injuries	
Traumatology	Classification of the fractures of tubular and flat bones	Analyze the X-ray examinations, determine the character of the fracture

1. Aims and tasks of the subject; its place in the educational process

1.1 Aims as for discipline's studying

The order of the teaching of the forensic medicine and medical legislation in the higher educational medical institutions of the Ukraine by the program for all faculties foresees, that each doctor, not depending on the chosen specialty and practical work, should be always ready to perform the duties of the forensic expert, as the procedural legislation requires. The modern specialist-forensic-medical expert should be educated and developed person. He should acquire the theoretical bases of his specialty, skillfully use the knowledge of the laws of the society, improve his practical skills, and always remember about the doctor's high mission and responsibility.

1.2. The main tasks of studying the discipline "Forensic Medicine":

Student should know:

- Laws, turned on the protection of inviolability of the individuality in the Ukraine;
- States of the Ukrainian legislation about forensic-medical examination, rules and duties and

responsibility of the medical staff for the professional offence, and also main laws, which regulate the practice of the medical staff;

The modern scientific data from all parts of the forensic medicine, and also use the main methods of examination of the main objects of forensic-medical examination (examination of the corpses, alive persons and material evidences)

Student should be able to do:

According to the state standards of the higher education student of medical faculties should be able to do:

- To know main laws which regulate medical practice.
- Use the laws according to the legislation regulations of the doctor's practice.
- Demonstrate the skills of description and extraction of the material evidences of the biological origin.
- To be able to find and describe the evidence of biological origin during the examination of place of death.
- Demonstrate the ability to perform forensic-medical examination of the corpse and detect the cause of the violent death
- To be able to determine moment of biological death.
- Demonstrate the ability to describe the physical injuries on human body.
- Demonstrate the ability to perform the forensic-medical examination of the victim, accused and other persons.

1.3 Competency and training results developed by the subject (the correlation with the normative content of training acquired by those who are obtaining higher education formulated in the terms of study results of Higher Educational Standarts).

According to the requirements of the Higher Education Standard, the discipline ensures that students acquire the following competencies:

- **integral:** the ability to solve complex tasks and problems in the field of health care in the specialty "Dentistry" in professional activities and in the learning process, which involves conducting research and/or implementing innovations and is characterized by the uncertainty of conditions and requirements.

general:

- 3K1 - ability to abstract thinking, analysis and synthesis;
- 3K2 - knowledge and understanding of the subject field and understanding of professional activity;
- 3K3 - ability to apply knowledge in practical activities;
- 3K4 - the ability to communicate in in English language both orally and in writing;
- 3K7 - the ability to communicate in in English language both orally and in writing;
- 3K8 - ability to adapt and act in a new situation;
- 3K9 - the ability to identify, pose and solve problems
- 3K10 - the ability to be critical and self-critical
- 3K11 - ability to work in a team;
- 3K13 - the ability to act socially responsibly and consciously;
- 3K14 - the ability to realize one's rights and responsibilities as a member of society, to realize the values of public society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine;the ability to learn and master modern knowledge;
- **special** (professional, subject):
- ΦK1 - the ability to collect medical information about the patient and analyze clinical data.
- ΦK2 - the ability to interpret the results of laboratory and instrumental research;
- ΦK3 - the ability to diagnose: determine preliminary, clinical, final, accompanying diagnosis,

emergency conditions;

Detailing of competencies in accordance with the NQF descriptors in the form of the "Competence Matrix".

№	Competence	Knowledge	Skills	Communication	Autonomy and responsibility
Integral competence					
the ability to solve complex tasks and problems in the field of health care in the specialty "Dentistry" in professional activities and in the learning process, which involves conducting research and/or implementing innovations and is characterized by the uncertainty of conditions and requirements.					
General competences					
1.	Ability to abstract thinking, analysis and synthesis (3K1)	Know the methods of analysis, synthesis and further modern learning.	Be able to analyze information, make informed decisions, be able to acquire modern knowledge.	Ability to effective communication in the course of analytical and synthetic activities	To be responsible for the analysis of acquired modern knowledge and their synthesis
2.	Knowledge and understanding subject area and professional understanding activities (3K2)	To know the ways of further education in order to obtain modern knowledge.	To be able to analyze the received information, to make informed decisions, to be able to acquire modern knowledge.	To establish appropriate connections for the achievement of goals.	To be responsible for the timely acquisition of modern knowledge
3.	Ability to apply knowledge in practice activities (3K3)	Have knowledge of the appropriate level in theoretical and clinical disciplines	Be able to apply knowledge of medical disciplines in practical situations	Ability to effectively form a communication strategy in professional activities; ability to exchange professional knowledge	To be responsibility for correctness application relevant knowledge in practical situations
4.	Ability communicate in English both orally and in writing (3K4)	Know and understand the subject field, understand the basic principles professional activity	To be able to use the acquired knowledge in the subject area and their understanding in professional activity	The ability to effectively form a communication strategy in professional activity	Being responsible for knowledge and understanding subject area and understanding of principles professional activity
5.	Ability to search, process and analyze information from various sources (3K7)	Know ways to adapt and act in new situations	Be able to choose ways adaptation and actions in new situations	Use communication opportunities in order to adapt and act in new conditions	Be responsibility for timely adaptation and actions in new situations
6.	Ability to adapt and act in a new situation (3K8)	Have the knowledge of the appropriate level to accept the justified of decisions	Be able to justify the decisions made	The ability to be effective communication within professional teams in order to make informed decisions	Carry responsibility for decisions made

7.	The ability to identify, pose and solve problems (3K9)	Know communication tactics and strategies, laws and methods of communication behavior	To be able to choose methods and strategies of communication to ensure effective team daily work	Use communication strategies and interpersonal skills actions	To be responsible for the choice and communication tactics
8.	Ability to be critical and self-critical (3K10)	To know communication tactics and strategies, laws and methods of communicative behavior	To be able to choose methods and strategies of communication to ensure effective communication interpersonal interaction	Use communication strategies and interpersonal skills	To be responsible for the results of interpersonal interaction
9.	Ability to work in a team (3K11)	Have deep knowledge in the field of information and communication technologies used in professional activities	To be able to use information and communication technologies in a professional field that needs updating and integration tions of knowledge	Use information and communication technologies in professional activities	To be responsible for the development of professional knowledge and skills in the field of information and communication technologies
10	The ability to act socially responsibly and consciously (3K13)	Know the search platforms to get relevant professional information	Be able to provide quality search sources of information, process and analyze the received data	To establish connections to ensure high-quality execution of the search for the necessary information, its processing and analysis	Be responsible for search results, processing and analysis of professional information
12	The ability to realize one's rights and responsibilities as a member of society, to realize the values of public society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine (3K14)	Know your social and public rights and responsibilities	To form one's civic consciousness, to be able to act in accordance with it	The ability to convey one's public and social position	Responsibility for one's civic position and activity

Special (professional, subject) competences

1	Ability to collect medical information about the patient and analyze clinical data (ΦK1)	To know the methods of obtaining medical information about the patient, to have knowledge about the analysis of clinical data	Be able to collect relevant medical information about the patient and analyze clinical data	Be able to adjust communication skills communication with the patient in order to obtain the necessary medical information about him	Carry responsibility for received medical information in each case; be responsible for the correctness of clinical data analysis
	Ability to definition necessary list laboratory and instrumental them research and their evaluations results (ΦK2)	Know about the necessary laboratory and instrumental research methods	Be able to determine the necessary list of laboratory and instrumental research methods; to be able to evaluate their results	Use methods of communication in the process definition of the necessary the list of laboratory and instrumental research methods, as well as in the process of evaluating their results	Carry responsibility for the selected list of necessary laboratory and instrumental methods research, as well as for evaluating their results

	Ability to installation previous and clinical diagnosis disease (ФК3)	To have specialized (professional) knowledge necessary for establishing preliminary and clinical diagnoses of the disease	Be able to formulate the previous and clinical diagnoses of the disease	Be able to communicate effectively with other members of the professional team in order to establish the correct preliminary and clinical diagnoses of the disease	Carry responsibility for established preliminary and clinical diagnoses of the disease

Program learning outcomes determined by the standard of higher education of the specialty

№	Program learning outcomes	General competences	Professional competences
ППН2	Collect information about the patient's general condition, evaluate the patient's psychomotor and physical development, the condition of the maxillofacial organs, based on the results of laboratory and instrumental studies, evaluate information about the diagnosis (according to list 5).	ЗК1, ЗК2, ЗК3, ЗК8, ЗК9, ЗК10, ЗК14	ФК1, ФК2, ФК3
ППН3	Prescribe and analyze additional (mandatory and optional) examination methods (laboratory, X-ray, functional and/or instrumental) according to list 5, of patients with diseases of organs and tissues of the oral cavity and maxillofacial region for differential diagnosis of diseases (according to the lists 2).	ЗК1, ЗК2, ЗК3, ЗК8, ЗК9, ЗК10, ЗК13, ЗК14	ФК1, ФК2, ФК3

2. Content of information of Forensic Medicine

Quantity of educational hours – 30 (1 credits ECTS), from them:

- ✓ Lectures - 0 hours.
- ✓ Practical classes – 15 hours.
- ✓ Independent work of students - 15 hours.

The program is structured for one semester.

Content module 1. Subject and tasks of forensic medicine and forensic dentistry.

The history of the development of forensic dentistry, procedural and organizational foundations forensic medical (dental) examination. Legal regulation of forensic medical expert activity.

Specific goals:

- To analyze the stages of development of domestic forensic medicine (dentistry), the contribution of individual scientists at each stage.
- To explain the principles of the organization of forensic medical examination in the state.
- Explain the function of the structural units of the forensic medical examination bureau.
- Interpret legislative norms regarding the appointment and conduct of a forensic medical examination.

Topic 1. Subject and tasks of forensic medicine (dentistry). The history of its development

Forensic medicine, definition of the concept, its content and tasks. The role and place of forensic dentistry in the system of forensic medical knowledge. Forensic medical examination, its role in

the work of law enforcement agencies and health care.

The emergence of domestic forensic dentistry, sources of its origin. Stages of the formation of domestic forensic dentistry: the stage of official recognition of forensic medicine and the importance of teeth in it as a medical field; forensic odontological stage; formation of forensic dentistry as a science; the stage of official registration of forensic dentistry as a science. Contribution of H. Vilha to the development of forensic dentistry.

Topic 2. Organizational and procedural principles of forensic medical examination in Ukraine

Forensic medical examination as one of the types of forensic examination and evidence in the legal process.

Legal acts regulating the conduct of forensic medical examinations - the Law "On Forensic Examination", "Basics of the Legislation of Ukraine on Health Protection", codes, additions and amendments to the Law "On Entrepreneurship", Order No. 6 "On the organization of judicial - medical examination in Ukraine" /1995/.

The concept of forensic medical examination, its mandatory appointment. Types of examinations, individual, commission and complex conducting.

The structure of the forensic medical service in Ukraine. The concept of the agency of the state forensic medical service. Bureau of forensic medical examination as an organizational link of the state forensic medical service, its structure and functions of subdivisions.

The concept of a forensic expert, a forensic medical expert, a specialist in the field of forensic medical examination, their duties, rights and responsibilities. Guarantees of the independence of the forensic expert. The role of the forensic medical expert (dentist) in the pre-trial investigation, inquiry and his participation in the court session.

Objects of forensic medical (dental) examination. Regulation of conducting forensic medical (dental) examinations and forensic medical (dental) research, documentation, its structure, order of compilation.

Content module 2. Forensic and medical thanatology

Specific goals

- To establish the fact of the occurrence of biological death.
- Conduct an examination of the face of the corpse at the scene.
- Describe the dental status of the corpse.
- Describe and remove physical evidence of biological origin.
- Conduct a forensic medical examination of the corpse's face during its autopsy.

Topic 3. Forensic and medical thanatology, examination of the corpse at the scene.

Concept of thanatology. Doctrine of death in forensic medicine. Concepts of death: death of a cell, organ, organism. Forensic classification of death. Violent and non-violent death. The role and limits of competence of the forensic medical expert in determining the type of violent death.

Dying and its stages. Terminal condition and its forensic significance, brain death. Confirmation of the fact of death, its signs and their definition, imaginary death.

Diagnosis of clinical and biological death, probable and probable /absolute/ signs of death. Changes that occur in organs and tissues after death. Survival of tissues and forensic medical significance of supravital reactions on the face.

Early cadaveric signs: cooling of the body, drying of parts of the corpse's body, cadaver spots: stages and term of their development, research methods. Corpse incantation, mechanism of development and means of detection. Autolysis.

Late cadaveric signs. The process of rotting a corpse, its essence; influence of various factors on the development of decay processes. The entomofauna of the corpse. Features of rotting of individual organs and tissues. Changes in the tissues of the face and the dental and jaw apparatus after death.

Natural preservation of corpses: mummification, tallow, peat tanning, freezing. Means of artificial preservation of corpses. Damage and destruction of corpses by insects and animals.

Forensic-medical establishment of the statute of limitations on the occurrence of death.

3.1. Examination of the corpse at the scene

Examination of the corpse at the place of its discovery. Legal regulation of the inspection of the scene of the incident. Organization of the review, its participants. Stages of review - static and dynamic. Tasks and functions of a specialist in the field of forensic medical examination during the examination of a corpse at the place of its discovery. Procedure and method of examination of a dead body. Identification, description, extraction and packaging of physical evidence of biological origin for further research. Documentation that is compiled during the inspection of the scene. The role of a forensic expert - a dentist during investigative actions in the event of a mass death.

Topic 4. General information about the forensic autopsy of a corpse and its demonstration

Forensic examination of a corpse (demonstration). Categories of corpses subject to forensic medical examination (examination). Rules and technique of forensic medical examination of corpses. Legal regulation of forensic medical examination of corpses. Questions that are resolved during autopsy. Peculiarities of forensic autopsy of a corpse. Peculiarities and technique of research of facial bones.

The concept of the cause of death. Classification of death. Documentation that is compiled during a forensic autopsy. Principles of construction of expert conclusions. Medical death certificate.

Content module 3. The role of the forensic dentist in establishing the identity of an unknown person.

Final goals

1. Demonstrate the ability to describe bodily injuries.
2. Inspect the face of the corpse.
3. Make a verbal portrait of the corpse.
4. Describe the dental status of the corpse.
5. Identify an unknown person by their dental status.

Topic 5. Forensic-dental identification of corpses of unknown persons

Peculiarities of research on corpses of unknown persons, documentation. The role of the forensic dentist in establishing the identity of an unknown person. Judicial dental identification of corpses of unknown persons. Concept of verbal portrait and features of its composition. Identification of a person by dental status: significance odontogram, panoramic X-ray, lifelong staining of teeth, palatography, dermography of lips, study of dental status, dentures. Recording system information about the state of the teeth.

Content module 4. Forensic medical examination of victims, accused and other persons.

Specific goals

1. Conduct an examination of the injured person for physical injuries located on the face.
2. Describe bodily injuries.

3. Determine the type and mechanism of injury.

4. To determine the degree of severity of bodily injury, the percentage of loss of general working capacity.

Topic 6. Forensic medical examination to determine the degree of severity of bodily injuries

Reasons for forensic medical examination of victims, accused and other persons, its organization, specifics of conducting and documentation.

Forensic medical examination regarding the presence of physical injuries on the victim. Determination of types of damage, age of application and degree of their severity.

Legal classification of bodily injuries according to their degree of severity in accordance with the Criminal Code of Ukraine. Serious injuries. Damage of medium severity. Minor injuries. Criteria for the severity of bodily injuries in accordance with the current "Rules for forensic medical determination of the severity of bodily injuries".

Forensic expert criteria for injuries to teeth, jaws, facial bones. Peculiarities of examination in case of irreparable facial disfigurement.

Topic 7. Forensic medical (dental) examination of age and state of health

Forensic-dental determination of a person's age. Examination of age determination, reasons and criteria for age determination, research methods.

Examination of the state of health: simulation, aggravation, dissimulation, artificial diseases, self-harm / mutilation of limbs. The value of medical documents for establishing the state of health, investigative materials for establishing the conditions under which the injury was caused. Peculiarities of conducting an examination to determine the state of health.

Content module 5. Forensic medical (dental) examination of injuries from mechanical factors (forensic dental traumatology)

Specific goals

1. Conduct an examination of the corpse for physical injuries located on the face.
2. Describe bodily injuries.
3. Determine the type and mechanism of injury.
4. Formulate issues that can be resolved during a forensic medical examination of injuries to the face.

Topic 8. General issues of forensic traumatology

Definition of the terms "trauma", "damage". Classification of injuries depending on the active factor, nature and degree of severity, consequences. Anatomical and functional injuries. Features of the description of bodily injuries.

Damage by blunt objects, their classification. The mechanism of action of blunt objects and the nature of injuries arising from their action.

Damage to the skin of the face - sores, bruises, closed wounds, their manifestations, dynamics of healing, meaning. Forensic examination of scars.

Topic 9. Damage by sharp objects

Types of sharp objects, mechanism of injury. Morphological features of cut, stab, stab-cut and chopped wounds. Questions that arise during the forensic medical examination of these injuries. Possibilities of establishing the mechanism of action and identification of sharp objects. Features of self-inflicted and non-self-inflicted injuries.

Causes of death from mechanical trauma caused by blunt and sharp objects, their forensic

determination.

Topic 10. Forensic medical examination of gunshot injuries

The concept of gunshot injuries. Firearms, their types. Cartridge and its components. Firing mechanism: the main ballistic wave, the killing power of the bullet. Zones of impact of bullets depending on their kinetic energy; hydrodynamic action of the ball. The structure of the combat cartridge, the mechanism of action of the projectile on clothing, tissues and organs depending on the distance of the shot. Additional shot factors. Signs of a close range shot. The value of the muzzle impression and the mechanism of its formation. Shot at close range, its signs. Shot at close range. Determining the entrance and exit bullet holes when firing at different distances on clothing and skin.

Damage from hunting weapons. Damage by gas weapons. Diagnosis of gunshot injuries from modern firearms.

Special research methods used in the examination of a gunshot wound: histological, chemical, radiological, photographic, spectrographic, contact-diffusion, direct microscopy, photography in infrared rays, etc.

Peculiarities of the inspection of the scene of the incident and the importance of the investigative experiment for solving the questions raised by the investigative bodies during the investigation of cases related to the examination of gunshot wounds. Features of self-inflicted gunshot wounds.

Topic 11. Forensic medical examination of mechanical asphyxia

Concepts of hypoxia, asphyxia and mechanical asphyxia. Clinical picture of dying from asphyxia, stages of the course. Post-asphyxial condition. Pathomorphological changes after death from mechanical asphyxiation are the so-called general asphyxiation signs.

Classification of mechanical asphyxia. Types of mechanical asphyxia encountered in dental practice, their diagnosis. The type of violent death in these types of asphyxia.

Content module 6. Forensic examination of injuries caused by other physical factors of the external environment.

Specific goals

Conduct an examination of the corpse for physical injuries located on the face.

1. Describe bodily injuries.
2. Determine the type and mechanism of injury.
3. Formulate issues that can be resolved during the forensic medical examination of a corpse.

Topic 12. Forensic medical examination of injuries caused by radiation energy

Forensic medical examination in case of injury by ionizing radiation. Effect of ionizing radiation on the human body. Radiation burns and radiation sickness. Effect of small doses of ionizing radiation on the body.

Acute radiation injury of the oral cavity: the effect of ionizing radiation on the mucous membrane, teeth and bones.

Topic 13. Forensic examination of injuries from laser radiation

Concept of laser and features of laser action on biological tissues. Laser thermal burn, laser wounds.

Topic 14. Forensic examination of injuries caused by atmospheric and technical electricity

The concept of technical electricity, the mechanism of action of technical electric current on the human body. Conditions that affect the consequences of electrocution. Peculiarities of the

inspection of the scene. Electrical label of current entry and exit from the body; other signs of current action. Laboratory methods of electromarking research.

Exposure to atmospheric electricity. Causes of death due to electrocution.

Topic 14.1. Forensic examination of injuries caused by extreme temperatures

Local and general effect of high temperature. Facial skin burns caused by flame, hot object, hot liquid and steam, their morphological characteristics. Determination of the effect of the damaging factor, area and degree of burns. Burns of the mucous membrane of the oral cavity. Effect of high temperature on bones and teeth. Local effect of low temperature, frostbite.

Content module 7. Forensic examination of injuries caused by chemical substances

Specific goals

1. Conduct an examination of the corpse for physical injuries located on the face.
2. Describe bodily injuries.
3. Determine the type and mechanism of injury.
4. Formulate issues that can be resolved during a forensic medical examination regarding the action of a chemical factor.

Topic 15. Forensic examination of chemical damage to facial tissues and teeth factors

The effect of a chemical factor on facial tissues, chemical burns and their features. Local manifestations on mucous membranes and teeth in case of intoxication by chemical factors.

Content module 8. Forensic examination of physical evidence of biological origin

Specific goals

- Determine the method of laboratory research to solve the questions.
- Interpret the results of laboratory studies.
- To describe material evidence of biological origin, first of all, traces of blood at the scene of the accident.
- Remove objects of biological origin from their location.
- Formulate issues that can be resolved during forensic medical examination of material evidence of biological origin.

Topic 16. Forensic examination of traces of blood

The concept of physical evidence, its importance in solving crimes against human health and life. The role of a specialist in the field of forensic medical examination in identifying and describing physical evidence.

Examination of blood. Classification of blood traces by form and mechanism of formation. Establishing the presence, species, group, gender of blood. Modern information about group characteristics of blood. Genotyposcopic research and its possibilities.

Determination of blood group by dental objects: tooth tissues, calculus, deposits on dentures.

Topic 17. Forensic examination of other biological objects.

Forensic hair examination. The structure of human and animal hair. Questions that can be solved by studying hair.

Saliva research: preliminary and proof-of-concept tests. Forensic cytological examination of objects of dental origin.

Content module 9. Forensic-medical-criminological methods of research during forensic-

medical (dental) examination.

Specific goals

- Determine the method of laboratory research to solve the questions.
- Interpret the results of laboratory studies.
- Formulate issues that can be resolved during forensic medical examination of physical evidence of biological origin.

Topic 18. Forensic-medical-criminological studies of objects of forensic-medical examination

Objects and issues that are resolved during the examination. Research methods. Expert capabilities when conducting an examination in cases of injuries caused by blunt sharp objects, firearms, electrical current.

Determination of the chemical composition of the dental prosthesis. Identification studies of instruments of injury. Identification of a person and methods for its implementation.

Content module 10. Legal aspects of providing medical (dental) assistance to the population. Criminal liability of medical workers for professional offenses.

Specific goals

To analyze the normative legal acts regulating the activity of medical employees and legal relations in the field of health care.

- To analyze the causes of adverse consequences in dental and medical practice, medical errors, accidents.

To characterize the professional offenses of medical workers.

Topic 19. Legal relations in the field of health care

Legal relations regulated by legal norms in the field of health care (norms medical law). Basic rights and responsibilities of the patient. The legal procedure for providing medical care help

Forensic medical aspects of medical ethics and deontology. Moral and ethical violations norms in the professional work of medical workers. Legal and moral and ethical norms, which regulate the relationship between the doctor and the patient. Professional duties and rights of medical workers stipulated by the "Fundamentals of legislation of Ukraine on health care". Medical secrecy. Euthanasia. Determination of adverse consequences in medical practice, medical errors, accidents cases Misdemeanors and crimes of medical workers.

Topic 20. Forensic medical examination of professional medical offenses employees

Legal responsibility of medical workers in case of improper provision of medical care help Professional and professional crimes of medical workers according to of the criminal code. The legal procedure for conducting forensic medical examinations, in cases of "medical affairs".

Reasons and features of examination of case materials, questions, which the commission forensic medical examination decides; objects of examination - medical documentation, conclusions of primary forensic examinations, data of witness interviews, inspection protocols places of events, etc. Peculiarities of the methodology of conducting examinations in cases of professional and official positions offenses of medical workers. Competences of the expert commission in the investigation of criminal liability cases medical workers. Use of examination materials for the prevention of medical offenses employees and improving the quality of medical and preventive care for the population.

3. STRUCTURE OF DISCIPLINE « FORENSIC MEDICINE (Dentistry) »

№	Themes content	Lectures	Practical classes	Independent work of students	IW
Thematic module 1. Subject and tasks of forensic medicine and forensic dentistry. History of the development of forensic dentistry, procedural and organizational foundations of forensic medical (dental) examination. Legal regulation of forensic medical expert activity					
1	Topic 1. Subject and tasks of forensic medicine (dentistry). The history of its development.			1	
2	Topic 2. Organizational and procedural principles of forensic medical examination.		2		
Thematic module 2. Forensic and medical thanatology					
1	Topic 3. Forensic and medical thanatology, examination of the corpse at the scene.		2		
2	Topic 4. General information about the forensic autopsy of a corpse and its demonstration.		2		
Thematic module 3. Forensics of Thanatology					
1	Topic 5. Forensic-dental identification of corpses of unknown persons.			1	
Thematic module 4. Forensic medical examination of victims, accused and other persons					
1	Topic 6. Forensic medical examination to determine the degree of severity of bodily injuries.		2		
2	Topic 7. Forensic medical (dental) examination of age and state of health.				1
Thematic module 5. Forensic medical (dental) examination of injuries from mechanical factors (forensic dental traumatology)					
1	Topic 8. General issues of forensic traumatology.		1	1	
2	Topic 9. Damage by sharp objects.		1		
3	Topic 10. Forensic medical examination of gunshot injuries.		2		
4	Topic 11. Forensic medical examination of mechanical asphyxia.		1,5		
Thematic module 6. Forensic examination of injuries caused by other physical factors of the external environment					
1	Topic 12. Forensic medical examination of injuries caused by radiation energy.			0,5	
2	Topic 13. Forensic examination of injuries from laser radiation.			0,5	
3	Topic 14. Forensic examination of injuries caused by atmospheric and technical electricity, extreme temperatures.		1,5	1	
Thematic module 7. Forensic examination of injuries caused by chemical substances					
1	Topic 15. Forensic examination of damage to facial tissues and teeth caused by chemical factors.			1	
Thematic module 8. Forensic examination of physical evidence of biological origin.					
1	Topic 16. Forensic examination of traces of blood.			0,5	
2	Topic 17. Forensic examination of other biological objects.			0,5	

Thematic module 9. Forensic-medical-criminological methods of research during forensic-medical (dental) examination.					
1	Topic 18. Forensic-medical-criminological studies of objects of forensic-medical examination.			1	
Thematic module 10. Legal aspects of providing medical (dental) assistance to the population. Criminal liability of medical workers for professional offenses.					
1	Topic 19. Legal relations in the field of health care.			0,5	
2	Topic 20. Forensic medical examination of professional offenses of medical workers			0,5	
Only hours				15	15
Credits ECTS			1		
Final control			Credit		

4. Thematic plan of the lectures.

Lectures are not provided according to the curriculum.

5. Thematic plan of practical classes

No	Themes content	Number of hours
1.	Organizational and procedural principles of performance of a forensic medical examination in Ukraine.	2
2.	Forensic medical thanatology. External examination of a corpse at the scene of death.	2
3.	Forensic medical autopsy, its demonstration.	2
4.	Estimation and qualification of body injuries according the existing legislation. Medico-legal evaluation of the degree of gravity of body injuries. Medico-legal expertise of professional crimes by medical workers.	2
5.	General questions of a forensic medical traumatology. Damages caused by the sharp objects.	2
6.	Medico-legal examination of firearms injuries.	2
7.	Medico-legal expertise of mechanical asphyxia. Medico-legal expertise of injuries caused by environmental factors.	3
Totally:		15

6. Thematic plan of independent works

No	The topic	Number of hours
	Theoretical training and skills training.	5
1.	The object and purpose of forensic medicine (dentistry). History of forensic medicine.	1
2.	Medico-legal (dentistry) expertise of age and state of health.	1
3.	Medico-legal expertise of professional crimes by medical workers.	1
4.	Medico-legal expertise of forensic traumatology.	1
5.	Forensic examination of the injuries caused by radiation.	1
6.	Forensic examination of the injuries caused by atmospheric and technical current.	1

7.	Medico-legal expertise damage to facial tissues and teeth by chemical factors.	1
8.	Forensic medical examination of material evidences, medical-criminalistic methods of research.	1
9.	Forensic dental identification of corpses of unknown persons.	1
10.	Forensic examination of material evidences of biological prigin.	1
	Totally:	15

7. Individual tasks of the student will be credited to the discipline on the condition that he fulfills the requirements of the educational program and, on the condition that the student has drawn up and submitted to the teacher the conclusion of the forensic medical examination of the corpse and does not have unworked absences of practical classes and negative evaluations.

When working on Topic 10: "Forensic examination of poisoning by various groups of poisons. Forensic-medical substantiation of the cause of death due to poisoning. Compilation of expert conclusions based on autopsy materials.", students complete the work "Expert's conclusion".

The evaluation of the "Conclusion of the forensic medical examination of the corpse" is carried out according to the following criteria:

"Passed" - awarded for the complete design of the "Conclusion" title page, the presence of a competent description of the external examination, the "injuries" section, the internal examination with the inclusion of the results of all necessary additional research methods (which correspond to the performed autopsy and the cause of death), with the wording of the final part " Conclusion" where the cause of death is correctly substantiated and confirmed, the physical injury is correctly assessed and characterized, and all questions are answered; grade "4" - given if all sections of the "Conclusion" are present, but with minor errors in its design, some incompleteness in the descriptive part (external and internal research), but with a full description in the final part, with answers to all questions, presented to the expert;

"Not counted" - issued for illegible handwriting in which the "Conclusion" is written, gross violation of the scheme and principles of wording of all sections of the "Conclusion", absence of part of the "Conclusion" or summaries, illiterate design of the "Conclusion".

8. Teaching methods

Types of educational activities of students according to the curriculum are: a) practical classes, c) independent work of students (SRS).

Current educational activities of students are monitored in practical classes in accordance with specific goals and during individual work of the teacher with students.

Evaluation of students' independent work, which is provided for in the topic along with classroom work.

Evaluation of students' independent work, which is provided for in the topic along with classroom work, is carried out during the current control of the topic in the corresponding classroom practical session.

The evaluation of topics that are assigned only to independent work and are not included in the topics of classroom training sessions is controlled during the final control.

The system of organizing classes:

Practical classes are conducted in the form of interactive communication between the teacher and students. In order to prepare for the practical session, the student must:

- study theoretical material using textbooks, methodical guides and other available sources;
- work out the topic of the student's independent work.

Approximate lesson plan:

- Formulation of the teacher's purpose and goals of the lesson.
- Interactive discussion of the topic in the form of a discussion, which includes information presented in tables, diagrams, pictures.
- If possible, conducting a demonstrative autopsy of the deceased's body.
- Final control of the lesson material, which includes assessment of independent work, oral answers and test control of theoretical knowledge.

9. Control methods

Forms of control and the evaluation system are carried out in accordance with the requirements of the discipline program and the Instruction on the evaluation system of students' educational activities under the credit-module system of the organization of the educational process, approved by the Ministry of Health of Ukraine (2005).

Current control is carried out at each practical session in accordance with the specific goals of each topic. When evaluating students' educational activities, it is necessary to give preference to standardized control methods: testing, structured written works, structured according to the procedure of control of practical skills in conditions close to real ones.

Types of control:

- current (in practical classes)
- final control form according to the curriculum - credit;

10. Current control is carried out during training sessions and is aimed at checking the students' assimilation of educational material (it is necessary to describe the forms of current control during training sessions on a 4-point (national) scale). Assessment forms for current educational activities should be standardized and include control of theoretical and practical training. It is carried out during practical classes and is aimed at checking the students' assimilation of the educational material.

During the current control of knowledge, the student is obliged to:

- demonstrate self-completed schemes, tables, algorithms (provided they are available for the corresponding lesson);
- to give written answers to the proposed tests (including A-format tests and multiple-choice tests - R, X) and situational problems. Evaluation criteria of current educational activity
- during the evaluation of the mastery of each topic for the current educational activity, the student is given grades on a 4-point (traditional) scale. At the same time, all types of work provided by the educational program are taken into account. The student must receive a grade in each topic.
- Forms of assessment of current educational activities include control of theoretical and practical training. Estimates given on a traditional scale are converted into points.

10.1. Assessment of current educational activities. Assessment of the current educational activity of students is carried out comprehensively with the use of standardized means of knowledge control, which allows to assess both theoretical knowledge and practical skills: students' initial knowledge of the topic is assessed, theoretical material is examined using visual forensic material - drugs, examinations, etc., and at the end of the lesson, the degree of assimilation of the educational material by the students is determined by solving situational problems.

During the evaluation of the mastery of each topic for the current educational activity, the student is assigned a 4-point (national) grade. At the same time, all types of work provided for by the

discipline program are taken into account. The student must receive a grade on each topic for further conversion of grades into points on a multi-point (200-point) scale.

Evaluation of current educational activities in practical classes:

"Excellent ("5") - The student correctly answered 90-100% of the tests. Answers correctly, clearly, completely and logically to standardized questions of the current topic, including questions of the lecture course and independent work. Closely connects theory with practice and correctly demonstrates the implementation of practical skills, correctly completed all tasks related to the subject of the lesson. Freely interprets detected morphological changes in the research object, solves situational problems of increased complexity, knows how to summarize the material.

"Good ("4") - The student answered correctly on 70-89% of the tests. Correctly and substantively answers the questions of the current topic, including the questions of the lecture course and independent work. Demonstrates performance of practical skills, completed all assigned tasks correctly or with minor errors. Correctly uses theoretical knowledge to interpret morphological findings changes in the object of research, solves easy and medium-complexity situational problems. Possesses the necessary practical skills and methods of their implementation in an amount that exceeds the required minimum.

"Satisfactory" ("3") - The student answered 50-69% of the tests correctly. Partially, with the help of additional questions, answers the standardized questions of the current topic, including questions of the lecture course and independent work. Can't independently construct a clear, logical answer, answers with significant errors. During the response and demonstration the performance of practical skills makes significant mistakes, with significant mistakes he completed the tasks set before him by the teacher. The student solves only easy situational problems, possesses only a minimum of necessary practical skills.

Unsatisfactory ("2") - The student correctly answered less than 50% of the tests. Does not know the material of the current topic, did not perform one of the mandatory types of work provided for in the practical lesson. He cannot independently construct a logical answer to additional questions; he does not understand the content of the material. During the response and demonstration of practical skills, he makes significant, gross mistakes.

Criteria for evaluating independent work: Evaluation of students' independent work, which is provided for in the topic along with classroom work, is carried out during the current control of the topic in the corresponding classroom lesson. The evaluation of topics that are assigned only to independent work and are not included in the topics of classroom training sessions is controlled during the final control.

10. The form of final control of the success of learning credits is a form of final control, which consists in assessing the student's assimilation of educational material solely on the basis of the results of his performance of certain types of work in practical, seminar or laboratory classes. Discipline assessment is carried out after the end of its study, before the beginning of the examination session.

11. Form of final control

- credit for the discipline "Forensic Medicine" is given only to students who have passed all topics in the discipline;

- the grade in the discipline is set as the average of the grades received in the classroom classes that are available in the academic discipline.

- incentive points by decision of the Academic Council can be added to the number of points from disciplines to students who have scientific publications or won prizes for participation in discipline Olympiad among universities of Ukraine and others.

12. Scores calculation:

The maximum number of points that a student can score for the current educational activity when studying the discipline is 200 points.

The minimum number of points that a student must score for the current educational activity for the enrollment of the discipline is 120 points.

The number of points is calculated on the basis of the grades received by the student for the 4th year point (national) scale during the study of the discipline, by calculation arithmetic mean (CA), rounded to two decimal places. The obtained value is converted into points on a multi-point scale as follows:

$$x = \frac{CA \times 120}{5}$$

For convenience, a calculation table is given on a 200-point scale:

Recalculation of the average grade for the current activity into a multi-point scale for disciplines ending with credit.

4-points scale	200-points scale	4-points scale	200-points scale	4-points scale	200-points scale	4-points scale	200-points scale
5	200	4.45	178	3.92	157	3.37	135
4.97	199	4.42	177	3.89	156	3.35	134
4.95	198	4.4	176	3.87	155	3.32	133
4.92	197	4.37	175	3.84	154	3.3	132
4.9	196	4.35	174	3.82	153	3.27	131
4.87	195	4.32	173	3.79	152	3.25	130
4.85	194	4.3	172	3.77	151	3.22	129
4.82	193	4.27	171	3.74	150	3.2	128
4.8	192	4.24	170	3.72	149	3.17	127
4.77	191	4.22	169	3.7	148	3.15	126
4.75	190	4.19	168	3.67	147	3.12	125
4.72	189	4.17	167	3.65	146	3.1	124
4.7	188	4.14	166	3.62	145	3.07	123
4.67	187	4.12	165	3.57	143	3.02	121
4.65	186	4.09	164	3.55	142	3	120
4.62	185	4.07	163	3.52	141	Less than 3	
4.6	184	4.04	162	3.5	140		
4.57	183	4.02	161	3.47	139		
4.52	181	3.99	160	3.45	138		
4.5	180	3.97	159	3.42	137		
4.47	179	3.94	158	3.4	136		

Conversion of the points according to ECTS-scale and traditional 4-pointed scale

Students, which study by one specialty are ranged by the ECTS-scale by such a way:

Traditional (national) mark	Points	Mark ECTS	Statistical indicator
“5” - excellent	175-200	A (excellent)	The best 10% students
“4” - good	160-174	B (very good)	The next 25% students
	140-159	C (good)	The next 30% students
“3” - satisfactory	120-139	D (satisfactory)	The next 25% students
“2” - badly (with the possibility of second passing*)	90-119	E (weakly)	The last 10% students

“2” - badly (with the possibility of second passing*)	< 90	Fx – did not pass / was absent	
“2” - badly (with the possibility of second course*)		F – is not allowed to pass the offset	

Footnote: * - by the decision of the dean's office.

13. Methodological support (educational content)

- Test and control tasks for practical classes;
- Questions and tasks to control the assimilation of the chapter;
- Methodical developments for the teacher;

Materials that are additionally distributed using the MISA electronic platform:

- Working curriculum of the discipline;
- Plans of lectures, practical classes and independent work of students;
- Abstracts of lectures on the discipline;
- Methodical instructions for practical classes for students;
- Materials that ensure independent work of students;
- Base of test control.

14 Recommended reading

Basic literature

1. Mykhailychenko B.V., Biliakov A.M., Savka I.G. Forensic medicine Textbook //Kyiv, 2022.-223 p.
2. Babanin A.A., Belovitsky O.V., Skrebkova O.Yu. Forensic medicine. Textbook // Simferopol, 2007. - 464 p.
3. Simpson’s forensic medicine. 13-th ed, 2011.

Supporting literature

1. Forensic evidence: science and the criminal law / Terrence F. Kiely - CRC Press. - 2001.
2. Forensic science: an illustrated dictionary / by John C. Brenner. - CRC Press. - 2000.
3. Guide to forensic pathology / Jay Dix, Roben Calaluze; with contributions by Mary Fran Ernst. - 1999.
4. Molecular forensics / edited by Ralph Rapley, David Whitehouse. - Wiley. - 2007.
5. Forensic Medicine : practical guide / V.V. Franchuk. - Ternopil : TSMU, 2011. - 204 p.
6. Lecture Notes on Forensic medicine, Third Edition. Gee P.J. Oxford London, 1979
7. Forensic pathology. Williams D.J., Ansford A.J., Priday D.C., Forrest A.S. - 1996. - 139 p.
8. Forensic pathology: Practical Aspects of Criminal and Forensic Investigations Series. DiMaio Vincent J., DiMaio D. - 2nd ed. - CRC Press LLC,. - 2001. - 565 p.
9. Textbook of medical jurisprudence, forensic medicine and toxicology. Parikh C.K. Parikhs - 2002. - 1249 p.

15. INFORMATIONAL RESOURCES

- <http://library.med.utah.edu/WebPath/webpath>.
- <http://www.webpathology.com/>