Odessa National Medical University
Faculty of Medicine №2
Department of Biophysics, Informatics and Medical Equipment

Syllabus course
Safety of Work with Medical Devices

Amount	90 hours, 3 credits
Semester, year of study	3rd semester, 2nd year
Days, time, place	The time and place (number of the lecture hall, auditorium, laboratory, studio, etc.) of the discipline is determined in accordance with the approved schedule.
Teacher (s)	Full Prof. Godlevsky LS, M.D., Head of Departm Assoc. Prof.Mandel OV, Ph.D Assoc. Prof.Zhumatiy PG, Ph.D Assoc. Prof.Matsko OM, Ph.D Senior Lecturer Marchenko SV Senior Lecturer Pribolovets TV Senior Lecturer Tatarchuk TV Senior Lecturer Bidnyuk KA, Candidate of Medical Sciences
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Workplace	Department of Biophysics, Informatics and Medical Equipment, Olgiivska Str 2.
Consultations	*Face-to-face consultations* : Thursday from 15:00 to 17:00; Saturday from 9:00 to 12:00 *Online consultations:* By prior arrangement with the teacher.

COMMUNICATION

Communication with students can be done via e-mail, social networks, telephone, face-to-face meetings.

COURSE ANNOTATION

The study of the discipline "Safety of Work with Medical Devices" is an important step in expanding the worldview of future medical workers, their protection in the process of production and domestic activities in peacetime and wartime emergencies. The need to ensure healthy and safe working conditions in health care institutions necessitates appropriate training of junior specialists in higher medical educational institutions.

Prerequisites and postrequisites of the course:

In accordance with the approved curriculum of the discipline:

a) integrates with such disciplines as medical and general physics, medical biology and others

b) lays down the basic provisions of the basics of the legislation of Ukraine on labor, the Law of Ukraine "On labor protection", normative acts on labor protection and its organization in medical and preventive institutions (LPU). The section "Occupational safety" studies the dangerous and harmful factors that occur in hospitals, and safety rules. In addition, the issues of fire safety are considered: the law of Ukraine "On fire safety", the causes of fires and their prevention in hospitals.

The purpose of the discipline is theoretical and practical training of students for the organization of safe work in health care institutions and institutions on the basis of knowledge of labor law and current legislation of Ukraine on these issues, by mastering scientifically sound norms of legal behavior of workers, education of workers environmental conditions, mastering the method of forecasting and detection of harmful environmental factors. The curriculum provides in-depth training of students to save lives and health of people in everyday life and at work, as well as in emergencies of various origins, including the elimination of the consequences of accidents and disasters in industry, transport, radiation and chemically dangerous objects, as well as in areas of natural disasters (earthquakes, floods, landslides, fires, etc.).

The main tasks of studying the discipline in accordance with the requirements of the educational-professional program to the knowledge and skills of students are as follows:

After studying the course, students should **know:**

- basics of Ukrainian labor legislation;
- basic principles of state policy in the field of labor protection, the Law of Ukraine "On labor protection";
- dangerous and harmful factors of the production environment;
- safety rules when working with electrical appliances, devices operating under pressure in structural units;
- safety rules in the structural units of hospitals of different profiles;
- basics of fire safety;
- causes of fires and their prevention in health care facilities;
- characteristics of the environment, industrial and domestic environment;
- causes and classification of emergencies;
- ways to protect the population in emergencies;
- basics of organization and conduct of rescue operations in case of emergencies;
- organization of medical care to the population in emergency situations.

Students must **be able to:**

- adhere to the rules of labor protection to prevent accidents and occupational diseases in the structural units of hospitals;
- keep documentation on labor protection in the structural unit;
- develop instructions on labor protection;
- safely service electrical equipment, devices operating under pressure;
- follow the rules of fire safety;
- use primary fire extinguishers;
- to conduct inspections of residential and industrial premises;
- provide first aid to victims in emergencies;
- use medical and anti-chemical means of protection of people in emergency situations.

Students should be **informed** about:

- material liability for causing damage to the institution;
- liability for violation of labor protection requirements;
- consequences of non-compliance with safety requirements;
- safety rules during operation of laser installations;
- safety rules when working in a radiology laboratory.

COURSE DESCRIPTION

Forms and methods of teaching

The course will be presented in the form of lectures (10 hours) and practical (40 hours), organization of independent work of students (40 hours).

The content of the discipline

1. The concept of the discipline "Occupational Safety and Health". Labor legislation of Ukraine
2. Law of Ukraine on labor protection. Ensuring healthy and safe working conditions
3. Safety measures during operation of electrical appliances, pressure equipment, gas cylinders.
4. Safety measures and labor protection in physiotherapy rooms, X-ray rooms, operating rooms
5. Occupational safety in infectious, anti-tuberculosis and psychiatric institutions.
6. Fire safety in hospitals.
7. Safety of life in everyday life, in everyday life, at work
8. Causes and protection of the population during emergencies (Natural disasters: causes, classification, medical and tactical characteristics. Industrial accidents and catastrophes. The main impact factors, their parameters and consequences for people.)
9. Causes and protection of the population during emergencies. (Radioactive contamination of the area and air pollution at nuclear power plants. Assessment of the radiation situation and during emergencies. Basic principles and means of protection of the population during emergencies. Public awareness. Use of personal protective equipment. Medical means of protection (engineering protection of the population).

10. Elimination of the consequences of emergencies. Rescue operations.

List of educational and methodical literature

Basic:

1. Intermediate Physics for Medicine and Biology / Russell K. Hobbie (Author), Bradley J. Roth. — 5th ed. — Springer Science+Business Media, 2015. — ISBN-13: 978-3319126814, ISBN-10: 3319126814
2. Compendium of Biophysics / Andrey B. Rubin First © 2017 Scrivener Publishing LLC ISBN:9781119160250 |Online ISBN:9781119160281 |DOI:10.1002/9781119160281

Additional:

1. Biophysics: An Introduction / Roland Glaser. Springer-Verlag Berlin Heidelberg, 2012. ISBN 978-3-642-25212-9
2. Physics in Biology and Medicine - 5th Edition / Paul Davidovits. Academic Press, 2018. ISBN: 9780128137178
3. Membrane Structural Biology With Biochemical and Biophysical Foundations 2nd Edition / Mary Luckey, San Francisco State University, 2014 ISBN: 9781107030633
4. Biophysics: Tools and Techniques / Betty Karasek. East West Books, 2017. ISBN-13: 978-1632385444. ISBN-10: 1632385449

Online resources:

1. https://info.odmu.edu.ua/chair/biophysics/files/428/en (Methodic resources of the department)
2. http://amphu.org (Medical Physics in Ukraine)
3. http://uamedphys.blogspot.com (Books on Medical Physics)
4. http://iopscience.iop.org/0031-9155 (Journal of Physics in Medicine and Biology)
5. http://mednavigator.net (Medical search engine)
6. https://physicsworld.com/c/medical-physics (Information resources of medical and biological physics)
7. http://iomp.org (International Organization of Medical Physics)
8. https://aapm.org/default.asp (Website of the American Association of Physicists in Medicine)
9. https://aapm.onlinelibrary.wiley.com/journal/24734209 ((Journal «Medical Physics»)
10. https://efomp.org (Website of the European Federation of Medical Physicists)
11. https://www.facebook.com/AmericanMedicalAssociation/ (American Medical Association)

EVALUATION

The university uses various forms of control of classes in a particular discipline (oral, written, combined, testing, practical skills, etc.). The results of students' academic performance are presented in the form of assessment on the national scale, 200-point and ECTS scale and have standardized generalized criteria for assessing knowledge:

National scale:

- the grade **"excellent" is given** to the student who systematically worked during a semester, showed during examination various and deep knowledge of a program material, is able to successfully carry out tasks which are provided by the program, has mastered the maintenance of the basic and additional literature, has understood interrelation of separate sections of discipline. importance for the future profession, showed creative abilities in understanding and using educational material, showed the ability to independently update and replenish knowledge; level of competence - high (creative);
- a grade of **"good" is given** to a student who has shown full knowledge of the curriculum, successfully completes the tasks provided by the program, mastered the basic literature recommended by the program, showed a sufficient level of knowledge in the discipline and is able to independently update and update during further study and professional activity; level of competence - sufficient (constructive-variable);
- the grade **"satisfactory" is given** to the student who has shown knowledge of the basic educational program material in the volume necessary for the further training and the subsequent work on a profession, copes with performance of the tasks provided by the program, has made separate mistakes in answers on examination and at performance of examination tasks, but has the necessary knowledge to overcome mistakes under the guidance of a researcher; level of competence - average (reproductive);
- the grade **"unsatisfactory" is given** to the student who did not show sufficient knowledge of the basic educational program material, made fundamental mistakes in performance of the tasks provided by the program, cannot without knowledge of the teacher to use knowledge at the further training, failed to master skills of independent work; level of competence - low (receptive-productive).

The final control in the form of tests is evaluated on a two-point scale:

- grade **"credited" is given** to a student who has completed the curriculum of the discipline, has no academic debt; level of competence - high (creative);

- the grade **"not credited" is given** to a student who has not fulfilled the curriculum of the discipline, has an academic debt (average score below 3.0 and / or absences); level of competence - low (receptive-productive).

The multi-point scale characterizes the actual success of each student in mastering the discipline. Conversion of the traditional grade from the discipline to 200-point is performed by the information and computer center of the university program "Contingent" according to the formula:

average grade point average (current / discipline) x 40

national grade	points
«5»	185 - 200
«4»	151 - 184
«3»	120 - 150

The ECTS rating scale evaluates the achievements of students in the discipline who study in one course of one specialty, in accordance with the points obtained by them, by ranking, namely:

ECTS	Statistical indicator
"A"	The best 10% of students
"B"	The next 25% of students
"C"	The next 30% of students
«D»	The next 25% of students
"E"	The last 10% of students

The ECTS scale establishes the student's belonging to the group of the best or worst among the reference group of classmates (faculty, specialty), ie his rating. When converting from a multi-point scale, as a rule, the limits of grades "A", "B", "C", "D", "E" do not coincide with the limits of grades "5", "4", "3" on the traditional scale. Grade "A" on the ECTS scale cannot be equal to grade "excellent", and grade "B" - grade "good" and so on.

Students who have received grades "Fx" and "F" ("2") are not included in the list of ranked students. Such students automatically receive a score of "E" after reassembly.

The grade "Fx" is given to students who scored the minimum number of points for the current educational activity, but who did not pass the final 30 control. Grade "F" is given to students who have attended all classes in the discipline, but did not score a grade point average (3.00) for current educational activities and are not admitted to the final control.

Criteria for assessing the current performance of students should be reflected by the departments in the work programs in the disciplines, indicating a clear structure of student receipt in the assessment class.

COURSE POLICY

Deadline and recompilation policy:

Deadlines and transfers are carried out according to the schedule.

Attendance and lateness policy :

In the absence of a student in class or when he is late, the student receives a mark n / b (was not), which requires further work in accordance with the provisions on the organization of the educational process by applicants for higher education at Odessa National Medical University.

Mobile devices

During practical classes, the use of a smartphone, tablet or other device for storing and processing information is allowed only with the permission of the teacher.

The use of mobile devices and their accessories is strictly prohibited during any form of control.

Behavior in the audience: observance of silence among students at lectures, exceptions - students' questions to the teacher regarding the explanation of the material; working discussion atmosphere in practical classes during the survey; adherence to the ethics of academic relations.