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Навчально-науковий центр радіаційної безпеки Київського
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Всеукраїнське об'єднання медичних фізиків та інженерів

**Медична фізика – сучасний стан, проблеми,
шляхи розвитку. Новітні технології**

Матеріали ІХ Міжнародної конференції
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**Medical Physics –
the Current Status, Problems, the Way of
Development. Innovation Technologies**

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Матеріали ІХ Міжнародної конференції «Медична фізика – сучасний стан, проблеми, шляхи розвитку. Новітні технології» відображають наукові, методичні та практичні результати досліджень, спрямованих на вдосконалення шляхів розвитку медичної фізики, подальшого просування новітніх технологій на ринку медичних послуг.

Конференція проводиться за ініціативою Навчально-наукового центру радіаційної безпеки Київського національного університету імені Тараса Шевченка, Всеукраїнського об'єднання медичних фізиків та інженерів за участю фахівців із провідних закладів вищої освіти, медичних, наукових та регулювальних установ, а також представників МАГАТЕ, Міністерства охорони здоров'я, Академії медичних наук України тощо.

Мета конференції – об'єднати зусилля спільноти в галузі освіти, науки, охорони здоров'я та ядерного регулювання для ефективної підготовки фахівців із медичної фізики.

Proceedings of IX International Conference «Medical physics – the current status, problems, the way of development. Innovation technologies» are reflecting the scientific, methodical and practical results of scientific researches. Results are directed to improve the way of medical physics development in post-Soviet countries and further promotion of innovation technologies in the market of medical services.

The workshop is held by initiative of Taras Shevchenko National University of Kyiv and Ukrainian Association of Medical Physicists and Engineers with the participation of specialists of leading institutions of higher education, medical and scientific organizations, authorities and also representatives of IAEA, Ministry of Public Health of Ukraine, National Academy of Medical Science of Ukraine, etc.

The conference aim is cooperation of community in the area of enlightenment, science, public health and nuclear regulation for effective training of specialists in medical physics.

11. ESTRO COVID-19 Resources. Режим
доступу <https://www.estro.org/About/Newsroom/COVID-19-and-Radiotherapy>
12. IAEA COVID-19: Webinars. Режим
доступу: <https://www.iaea.org/topics/health/infectious-diseases/covid-19/webinars>
13. IOMP COVID-19 Information Resource. Режим
доступу: <https://www.iomp.org/covid-19-information-resource/>

PEDAGOGICAL ASPECTS OF TEACHING STUDENTS ON THE COURSE «MEDICAL PHYSICS» AT KHARKIV NATIONAL MEDICAL UNIVERSITY

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Annotation: The concept of the organization of the educational process in teaching of medical physics at the Kharkiv National Medical University is considered.

Keywords: medical physics, medical hardware and software diagnostic complex, doctor, competence.

At the initial stage of training medical personnel (I and II courses of Kharkiv National University (KhNMU)), the role of physics is invaluable. The physics has contributes to the formation of such qualities of thinking of a future doctor as competence in choosing treatment approaches, flexibility, criticality, provides the information models that take into account physical processes occurring in the tissues and cells of the body and are actively used in medical practice. Physics as one of the fundamental disciplines likes as well as anatomy, chemistry, biology, and other specialized subjects, provides the necessary knowledge for conducting complex examinations of patients [1].

The purpose of the article is the development and theoretical substantiation of pedagogical and methodological support for the training of medical specialists, which the study of the course of

Medical and Biological Physics at KhNMU. Such support includes a professionally oriented basic physics course for future physicians, recommendations for the purposeful introduction of the main groups of technical devices and concepts of the Medical Hardware and Software Diagnostic Complex (MHSDC) into the content of special medical disciplines (Medical Informatics), as well as the provision of research and experimental work of medical students in the framework of their coursework preparation.

The cycle of work of a teacher with students includes the following main functions.

The first is the installation function, which is based on an introduction to the topic, setting goals, objectives, and a description of the practical usefulness, essence and interrelation of the main sections of the content material, recommendations for working with teaching aids. For the full assimilation of the material, it is necessary to provide students with textbooks and workbooks, terminological dictionaries [2], which would not be overloaded with unnecessary information, carried only the most necessary informational loads, had multifunctional, allowed the student to find the information that is of interest to him which have signs of a certain pedagogical technology and provided conditions for independent learning. Our lecture aids can be used as synopses, where the student will find the necessary comprehensive answer for each item of the work program [3, 4]. The second function is control and correction. It consists in ensuring control over the implementation of educational actions in the independent work of students, conducting individual consultations and implementing appropriate corrective actions. The third function is evaluative and expert advisory. It involves testing, assessing the knowledge and skills of students, organizing a dialogue to identify their main difficulties, the teacher's demonstration of correct actions, interaction, reference ways of working in the position of an expert or consultant. Among the methods that provide a significant strengthening of the developmental and professional role of training medical students in their professional education in medical physics, it is possible to single out a specially organized

implementation of individual and group research projects that include the main components of the MHSDC. It should be remembered that overloading with theoretical material can have the opposite effect, when, instead of a well-balanced understanding of the fundamentals of the subject, the student ceases to understand it at all. As a result, interest in studying the subject decreases, the overall academic performance of the student decreases, and interest in the study of medicine in general disappears [5].

The fourth function is pedagogical and educational. Given the lack of a clear understanding by students of what position they will work in after graduating from a medical university and uncertainty about social guarantees that should be provided by the state, the most important in the formation of high motivation for learning is teaching talent. The ability of the teaching staff of the University to interest the student in mastering the profession of a doctor, become a model for the student, a mentor to whom the student can turn for help.

Summarizing the few studies from the perspective of the presented problems of teaching Medical Physics and taking into account the specifics and complexity of teaching students at a medical university, a system of methodological conditions was proposed, which involves the phased inclusion of information in the I and II course of study at the Department of Medical and Biological Physics and Medical Information Science of KhNMU , possessing a certain developmental potential, as well as scientific and methodological significance for future medical professionals.

Building the content of the Medical Physics course, taking into account the principle of a tiered approach at this stage of training, ensures the selection of educational material, both by students and teachers, in terms of algorithms of its information capacity, and allows differentiating the depth of presentation of individual issues depending on their methodological and professional significance for narrow -directed specialization of the future doctor. The main directions of the course section regulate the content of Medical physics topics (“Radiation physics”, “Basics of dosimetry”, “Medical and biological applications of quantum-

mechanical phenomena”, “Electrodynamics”, “Fundamentals of medical equipment”, etc.) [6] and time, allotted for their study, and also distributed of the material between the basic and additional components of the course.

The condition of the motivational-target factor in the selection of educational material corresponds to the content of the course of Medical Physics and the possibility of its presentation, the psychological characteristics of students, associated, in particular, with their future professional activities of a doctor.

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