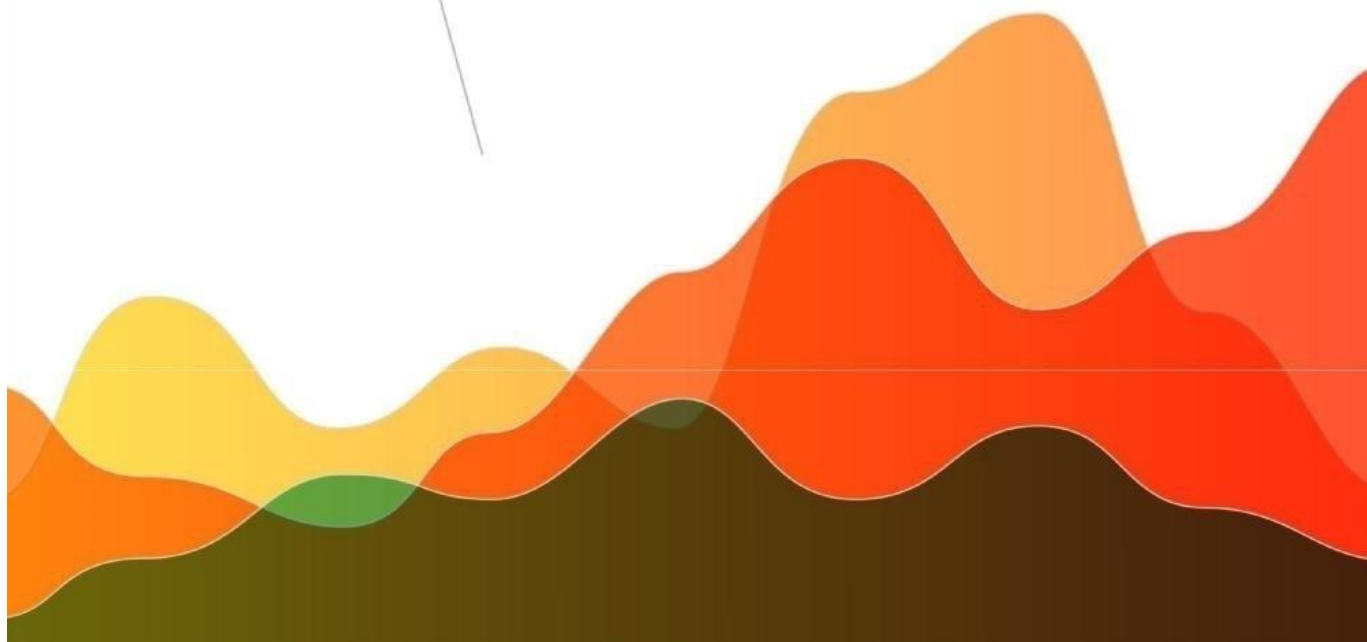


# **ADVANCES OF SCIENCE**

**Proceedings of articles the international  
scientific conference  
Czech Republic, Karlovy Vary -  
Ukraine, Kyiv, 17 August 2018**



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# **THE ROLE OF INFORMATIONAL TECHNOLOGIES OF DISTANCE EDUCATION IN FORMATION OF PROFESSIONAL COMPETENCE OF FUTURE PHARMS IN THE PROCESS OF ANALYTICAL CHEMISTRY TRAINING**

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The current economic state of society has created the preconditions for the need for awareness of such concepts as competition, unemployment, entrepreneurship, in connection with which new educational problems are put forward in the system of education, new goals and objectives are put forward. The main task of a professional educational institution is a timely response to labor market demands: it is necessary to train specialists competent in their professional activities. Under the professional competence they understand the totality of theoretical knowledge, practical skills, personal qualities and practical readiness, and the ability of a person to carry out professional activities.

Requirements for the preparation of a modern pharmacist, and the methodological difficulties that arise during this, lead to the identification of methods for the formation of fundamental knowledge and mastery of the profession of pharmacist. Information technology of particular importance is in shaping the professional competence of the pharmacist, as the global informatization of society makes its adjustments to the learning process.

Today it is impossible to imagine the educational process of higher education without the use of information technology, because it is the modern information technology (IT) made it possible for each specialist to access a huge number of different types of information. In accordance with the requirements for the professional competencies of pharmacists, the prospect of reforming the system of higher pharmaceutical education according to the needs of the modern medical market is seen. That, in turn, leads to the creation and / or renewal of traditional educational programs aimed at developing the professional competence of the pharmaceutical staff that meet the current conditions of their activities. A significant part of the learning process and the process of obtaining new information from a particular discipline is the process of self-education, which becomes more accessible and organized through distance learning platforms. The distance learning form is not traditional for medical education, but it still has its place. Therefore, on the basis of the Moodle platform, some distance learning courses are available at some universities at individual universities for preparation for practical classes and final modular controls [4]. Our university also uses the platform Moodle, which on the walls of the university is called NEURON (<https://step.nmu.ua/>).

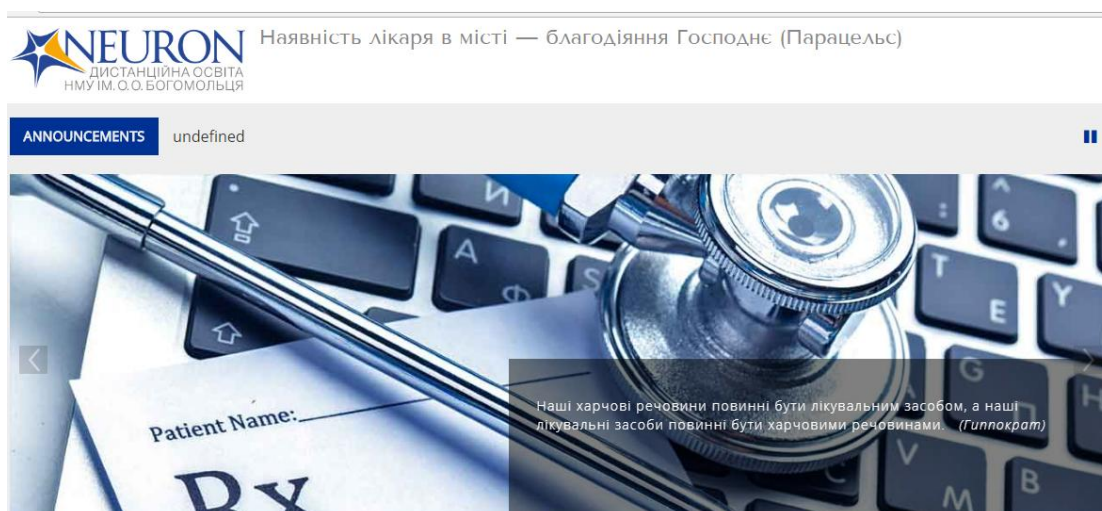


Fig.1. Home page of the distance education NMU

The NEURON contains educational materials for all the faculties, as well as for preparation for the Step. For the training of future pharmacists, the course "Analytical chemistry" has been downloaded to the site.

Analytical chemistry is a fundamental chemical science on the methods of determining the qualitative and quantitative composition of compounds and their mixtures, as well as the establishment of the chemical structure of substances. Analytical chemistry is closely related to inorganic, organic, physical and colloidal chemistry, this is one of the most important general chemical disciplines studied by students at the Faculty of Pharmacy at junior high schools, laying the foundations for further study of special pharmaceutical disciplines - pharmaceutical, toxicological chemistry, pharmacognosy, technological subjects (pharmacy technology of medicines, industrial technology of medicines, technology of perfumery and cosmetic means of industrial production) and other disciplines included in the curriculum of training specialists in the field of knowledge 22 "Health" on the specialty 226 "Pharmacy, industrial pharmacy". And, despite the fact that analytical chemistry is a purely chemical discipline that does not belong to specialized subjects, the purpose and tasks of its teaching in accordance with educational standards and curriculum envisages the formation of the academic, social, personal and professional competences that are necessary for a successful professional activity of a pharmacist working in a pharmacy, a pharmaceutical company, a laboratory for quality control of medicinal products or a chemical-toxicological laboratory.



Fig.2. The content of the course is an analytical chemistry (<https://step.nmu.ua/course/index.php?categoryid=38>)

Teaching of analytical chemistry for students of the pharmaceutical faculty has a number of features. The typical program includes mainly analytical methods used in the pharmaceutical analysis. In the study of qualitative analysis, particular attention is paid to the reactions of identification of cations and anions used in the State Pharmacopoeia of Ukraine. In the course of analytical chemistry for future pharmacists widely presented titrimetric analysis methods that play an important role in controlling the quality of pharmaceutical substances. Students study theoretical foundations and master the practical skills of using acid-base, complexometric, precipitation (argentometric, sulfatometric, mercurometric), oxidative-reduction

(permanganometric, iodometric, bromometric, cerimeter) titration. The volume and depth of the study of instrumental methods of analysis in recent years is increasing. Students study theoretical laws and peculiarities of practical application of spectrometric, chromatographic and electrochemical methods of analysis. All the necessary and additional educational materials are placed on the site in accordance with the module and the topics that engage in a better recruitment and assimilation, as well as the formation of professional and informational competences for future pharmacists.



Fig. 3 and 4. Module 1 (<https://step.nmu.ua/course/view.php?id=220>) and module 2 (<https://step.nmu.ua/course/view.php?id=221>) from analytical chemistry

The system of evaluation of students' educational activity in analytical chemistry at the Pharmaceutical Faculty of the Bogomolets National Medical University incorporates standardized methods of control: testing, structured written work, structured control of practical knowledge. An important advantage of NEURON is that the teacher can set the number of points that can be obtained by a student for one or another kind of activity as provided by the work program, and students have access to viewing and controlling the presentation on the site and enrollment of not only



educational materials, but also their assessments. . It definitely stimulates them to study.

In addition, in the third year students complete the test "Step 1" as part of the standardized test state exam. It is conducted after studying the disciplines of the natural sciences cycle and measures indicators of the quality of professional competence of basic higher education, including analytical chemistry. That is why our site contains tests individually depending on the profile and disciplines. From the analytical chemistry, test tasks are selected separately from discipline by years, from booklets. Step 1. Pharmacy 2005-2017 years (<https://step.nmu.ua/course/view.php?id=238>), as well as depending on the module and the topics to which they are related (<https://step.nmu.ua/course/view.php?id=224>).

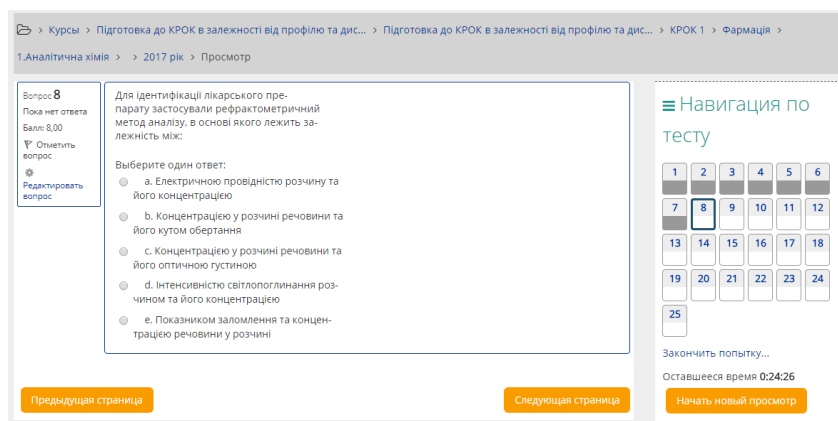


Fig. 5. An example of a TT on analytical chemistry and a site NEURON

During testing for each test task, as during the Step, 1 minute is allocated, which makes the simulation of the exam in non-auditing conditions.

The testing of "Step 1" fully implements its functions, but it can not be a complete source of data essential for the modernization of the learning process, as readiness for activity (professional) should be revealed in the process of activity (professional or close to it) [1], which is not maybe for objective reasons, adequately implemented in the test. At the same time, gaining the experience of meaningful activity positively affects the results of passing the exam "Step 1" [2]. Therefore, in the

process of learning we must include activities that contribute to the formation of cognitive and creative components of professional preparedness, reinforcing them with the appropriate organizational form.

The system of continuous control of student participation in the studies that is currently practiced at the university implies that the student knows not only the schedule and the place of the classes but also the approximate content of the training in each class, he knows that he must receive a certain number of rating points for each lesson. In addition, the student must first familiarize himself with the educational material that is planned to be studied in the future class, be it a practical lesson or a lecture, and in each class it is planned to carry out control measures (in a different form, but with the obligatory maximum coverage of the subjects teaching). Thus, the role of extra-auditing work [3] is significantly increased. Therefore, it is necessary to look for models of the organization of the educational process, suitable for their effective use, in particular through the rational combination of traditional forms and methods of working with information technology teaching.

Use of NEURON in the study of analytical chemistry in Bogomolets National Medical University is an integral part of the process of teaching students of the pharmaceutical faculty. Thanks to the distance learning site, students have access to learning materials 24/7, always "online", which helps to better assimilate information. Through the use of the Moodle platform students are better formed by professional competence, which makes them first of all competent professionals and competitive specialists in the labor market.

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