

GALYNA ZOTYEVA, YAROSLAV VYRSTA**DISTANCE LEARNING PECULIARITIES AT COLLEGES IN UKRAINE**

The problem of distance learning implementation at colleges in Ukraine is considered. The relevance of the article is in the need of distance learning and use of the opportunities offered by that means of teaching. Distance learning main aspects, which create the necessary background for scientific achievements are systematized and analyzed in the article. Conceptual ideas of distance education in colleges and further perspectives for the development information and communication technologies in the distance education are investigated. The basis of the diagnosis and monitoring of the quality of education are curricula, programs, the content of which is set out by academic disciplines. The system of management of students in the conditions of distance learning implements the laws underlying the organization of the educational process.

Keywords: distance education; on-line learning; information and communication technologies ICT

Г. О. ЗОТЬЄВА, Я. Я. ВІРСТА**ОСОБЛИВОСТІ ДИСТАНЦІЙНОГО НАВЧАННЯ В КОЛЕДЖАХ В УКРАЇНІ**

Розглянуто проблему впровадження дистанційного навчання в коледжах в Україні. Актуальність статті полягає в необхідності дистанційного навчання та використанні можливостей, які надає цей спосіб навчання. У статті систематизовано та проаналізовано основні аспекти дистанційного навчання, які створюють необхідну основу для наукових досягнень. Досліджуються концептуальні ідеї дистанційної освіти в коледжах та подальші перспективи розвитку інформаційно-комунікаційних технологій у дистанційній освіті. Основою діагностики та моніторингу якості освіти є навчальні програми, програми, зміст яких визначається навчальними дисциплінами. Система управління студентами в умовах дистанційного навчання реалізує закони, що лежать в основі організації навчального процесу.

Ключові слова: дистанційна освіта; он-лайн навчання; інформаційно-комунікаційні технології ІКТ

Г. А. ЗОТЬЄВА, Я. Я. ВІРСТА**ОСОБЕННОСТИ ДИСТАНЦИОННОГО ОБУЧЕНИЯ В КОЛЛЕДЖАХ В УКРАИНЕ**

Рассмотрена проблема внедрения дистанционного обучения в колледжах в Украине. Актуальность статьи заключается в необходимости дистанционного обучения и использования возможностей, которые предоставляет этот способ обучения. В статье систематизированы и проанализированы основные аспекты дистанционного обучения, которые создают необходимую основу для научных достижений. Исследуются концептуальные идеи дистанционного образования в колледжах и дальнейшие перспективы развития информационно-коммуникационных технологий в дистанционном образовании. Основой диагностики и контроля качества образования являются учебные планы, программы, содержание которых устанавливается учебными дисциплинами. Система управления студентами в условиях дистанционного обучения реализует законы, лежащие в основе организации учебного процесса.

Ключевые слова: дистанционное образование; онлайн обучение; информационно-коммуникационные технологии ИКТ

Introduction. At the present stage, the processes of change in society are closely connected with the introduction of the innovative educational paradigm of higher education. It determines the need to modernize the higher education system, which is focused on the integration of Ukraine into the global academic community. The main goal of distance education development in Ukraine is to increase the general intellectual level of society, to ensure the high quality of education, as well as the formation of educational space. Modern information and communication technologies make it possible to change the role and purpose of education, significantly expand the range of educational services, and also develop and apply specific educational technologies characteristic of distance learning.

Statement of the problem in general and its connection with important scientific or practical tasks. The problem of introducing distance learning has attracted considerable attention due to socio-economic factors. It is important to ensure the well-being of students in a market reality, the amount of students who want to get an education without separation from the main place of practical activity is growing. The introduction of innovative technologies in the education system has increased the quantity of educational institutions providing training in various ways, forms and methods of teaching [1–10].

© Galyna Zotyeva, Yaroslav Vyrsta, 2019

That form of education enables to study at any educational institution, regardless of the place of residence and location of the educational institution.

The organization of quality distance learning has a positive effect on the intellectual potential of the state. Modern trends in the development of education necessitate the study of the experience at the leading countries of the world in the organization of distance learning. The analysis of a significant number of sources enabled determining the directions for implementing the strategy for the development of distance education: development of theoretical models for diagnosing and monitoring the quality of education; development of a system of criteria and tools for diagnosing and monitoring the quality of education; development of organizational and managerial models and technologies of education quality management. National character generalization of scientific knowledge, humanization, democratization and openness of education are main tendencies. Integration processes have reached such a level that economic processes in a particular region cause a chain reaction in the country's economy. In the field of higher education, the instrument of globalization and integration processes is the national character of scientific knowledge. The level of communication between scientific communities is such that new knowledge, new technologies and development based on this knowledge become the heritage of all mankind and influence the development of the state regardless of national, religious and other features.

Examples include financial crises associated with falling prices for oil and energy and the like. Even natural events occurring locally, cause reviews in the economy of the country. One of the forms of the principle of globalization of education is the student exchange process that has covered all countries of the world. Ukraine is conducting a campaign to attract foreign students. With the growth of cooperation between various regions of the world, states increasingly recognize the need to expand student mobility. However, despite the benefits of supporting student exchanges, private foundations and personal funds from students are the main source of funding for education in other countries. At the same time, all host countries point out that student exchanges are a favorable factor in the activities of higher education institutions. It adds to universities and colleges additional responsibility in connection with the provision of special services and curricula for foreign students. In almost all countries, it is recognized that foreign students are an important source of funding for higher education institutions. It enables universal computer literacy and the creation of a telecommunications environment. New information technologies in education are associated with the wide penetration of computer and satellite equipment into all spheres of human activity, which caused new problems and opened up new perspectives for the education system as a whole. At first, computers in the higher education system appeared as a research tool. However, the technological breakthrough associated with the creation

of personal computers in the early 80s, led to a qualitative revolution in relation to digital technology. As a result of the growth in the absolute number of personal computers in the world, the computer began to be used as a means of supporting the learning process. At the same time, the creation of global information networks and the openness of information have led to the fact that not only educational institutions, but also global information resources are becoming a source of new knowledge and educational information [11–15]. As a result, the education system faced the problem of enabling universal computer literacy and multimedia technologies for the achievement of new methods in education.

Level of computerization in education is an indicator of the quality of education and the stage of progress of the state, its ability and development in the XXI century. In the field of computerization of education, the process of penetration digital technologies into the system of higher education is the division of states into “information rich” and “information poor”. The implementation of computer technology education is impossible without creating a telecommunications environment that can transfer huge amounts of information with acceptable speeds for learning. Implementation computer technology in education at the first stage was accompanied by rather hectic expectations. In a sense, this process is reminiscent of the hopes that have been pinned on radio, film and television in education. It is known that they were not justified, and the development of pedagogy based on these technologies did not bring the desired results. But digital technologies will occupy a large niche in the educational process, not replacing the teacher's live communication with students, not crowding out, but only complementing it. At the same time, as before, new technologies of education, control, testing require the development of the foundations and methods of pedagogy in the field of multimedia technologies, which are currently not developed in detail and are in the development stage. Thus, the tendency of computerization of education, which is an element of the national security doctrine, has been outlined and actively implemented improving the methodological support of distance learning. Ukraine has systematically expanded the quantity of colleges with potentially interesting and methodically sound educational material for education. There are differences in the curricula for students studying in the system of distance learning, in the direction of simplifying and facilitating them.

Currently, there are no additional criteria for monitoring distance learning programs and courses other than general ones that are used to evaluate traditional training. The development of distance learning is hampered by the extremely time-consuming creation of application packages that support an interactive learning process within multimedia technologies. Economic development of the state, different levels of education, ensuring rights and freedom citizens, the level of wages, the formation of an open society, the international nature of science are integral to the concept of development of

our country. An essential element of the higher school of the 21st century is the study of English, the language of international scientific communication and digital computer technology. Of course, there are other trends in the distance education reform in higher education, such as humanization, democratization, protection of individual rights and freedoms, protection of women's rights, and the ecology of education, but these trends mainly affect the higher education system.

The term "distance learning" means an individualized process of acquiring knowledge, abilities, skills and ways of human cognitive activity, which occurs mainly due to the indirect interaction of participants from the educational process that are distant from each other in a specialized environment, operating on the basis of modern psychological, educational and information and communication technologies. Distance learning is a set of technologies that provide delivery to the trainees, the bulk of the material studied; interactive interaction between students and teachers in the learning process, providing students with the opportunity for independent work on mastering the material being studied, as well as in the learning process.

The goal of distance learning is the provision of educational services through the use of modern information and communication technologies in teaching at certain educational or educational qualification levels in accordance with state educational standards; according to the programs of preparation of citizens for entering educational institutions, training of foreigners and advanced training of workers.

The task of distance learning is to provide citizens with the opportunity to exercise the constitutional right to receive education and professional qualifications, advanced training regardless of gender, race, nationality, social and property status, type and nature of occupation, worldview convictions, membership in a party, attitude to religion, religion, health status, place of residence in accordance with their abilities. Prerequisites for the development of distance learning are: the rapid development of information technology; continuous reduction of the cost of services for the connection and use of the global Internet, its resources and services; a significant deepening of the processes of introducing information technologies in educational practice; widespread computer hardware among the public. A specialist of the 21st century is a person who is fluent in modern information technologies, constantly improving and improving his professional level. Acquiring new knowledge and skills that are meaningful, useful, and used in a person's professional activity in the conditions of the information society greatly expands the possibilities for self-realization and promotes career growth. If the school is located in another city, it is inconvenient and expensive to attend classes often. It should be noted that the "classic" extramural education often does not justify its purpose. The knowledge that a student receives is often superficial, and the classes themselves are unproductive. In addition, the learning process continues for quite some time.

Conclusions and prospects for further research into the problem. In Ukraine, the concept of distance learning refers to those didactic concepts, the place of which among the didactic categories is not strictly defined. It was facilitated by the absence until recently of a unified concept of distance learning. Currently, there are different views on distance learning as a new universal form of education that can change the traditional, to the technology of recruiting means and methods for the transmission of educational information. Throughout its existence, distance learning in the system of higher education in Sweden has received and receives significant government support, which contributes to its dynamic development and successful functioning. As a form of control in distance education, remotely organized exams, interviews, practical, course and design work, external studies, computer intelligent testing systems are used. It should be particularly noted that the solution to the problem of quality control of distance learning, its compliance with educational standards is of fundamental importance for the success of the entire distance learning system. The academic recognition of distance learning courses, the possibility of setting off for their passing through traditional educational institutions depends on the success of its solution. Therefore, to exercise control in distance learning, a unified system of state testing should be created.

The basis of the educational process in distance learning is a focused and controlled intensive independent work of the student, studying on an individual schedule, at a convenient pace. Students at colleges and universities select subjects from the list of course modules and form their curriculum. The use of the latest advances in information technology contributes to the integration of the student into the global post-industrial information society, providing for an increase in the share of highly skilled workers with an appropriate level of education. Distance learning is intended, first of all, to acquaint students with the theoretical foundations of future professional activities, providing unlimited opportunities to search for additional diverse information that is adequate to the needs of the student. The variability of training modules enables, when studying, to study specific aspects of their chosen problem. Modern information technologies and communication systems make it possible to radically change the role and purpose of education, significantly expand the range of educational services, and also develop and apply specific educational technologies characteristic of distance education. In this case, there is a need for a thorough study of the theoretical foundations and practical experience in the implementation of such educational technologies. E-learning is one of the progressive forms of education of the general population. It is one of the main ways of digitalization in education and the use of new technologies in education, serves to increase the efficiency of education. The organization of quality distance education has a positive effect on the intellectual potential of the state. The main thing in the organization of distance learning is the creation of electronic courses,

the development of didactic foundations of distance learning, and the training of coordinator teachers. Distance learning technology is a set of methods, forms and means of interaction with a person in the process of independent, but controlled development of a certain body of knowledge by him.

Educational technology is built on the foundation of a certain content and must comply with the requirements of its presentation. The content of the proposed knowledge is accumulated in special courses and modules designed for distance learning and based on existing country educational standards, as well as in data banks. The central element of the distance learning system is telecommunications and their translational basis. It is important to note that the information provided by the student is carried out in the form of printed materials (educational and methodical sets of literature and tasks) and electronic materials (computer, educational environments, databases, knowledge banks, electronic textbooks). At the same time, information carriers are books, flexible magnetic, laser or hard disks, audio or video tapes, teaching aids ("cases"), computers, televisions, telephones, special multimedia technologies act as learning tools. The didactic component should be provided by the development of teachers and psychologists, such as, for example, the technology of individualized education, an adaptive learning system, and training based on an individually-oriented curriculum.

Speaking about the strategy of updating education the set of conceptual ideas, scientific and methodological developments and organizational and managerial measures to create a system for diagnosing and monitoring quality as a system forming module of all innovation in the education system is important. The simultaneous solution of many problems associated with the implementation of this strategy is impossible. Based on the analysis of a significant number of sources, it is necessary to talk about ways to implement the strategy.

The basis of the diagnosis and monitoring of the quality of education are curricula, programs, the content of which is set out by academic disciplines. The system of management of students in the conditions of distance learning implements the laws underlying the organization of the educational process. It is noted, first of all, the specific nature of the patterns of learning, is a complex conditionality of objective and subjective factors, indicating the special importance of the principles of learning as provisions affecting the dialectic of the development of the learning process, the interaction of its main systems. After all, principles determine the practice of learning is ambiguous. On the one hand, being guided by them, it is possible to substantiate, in each specific case management actions are required on the student's activities. On the other hand, focusing on didactic principles, one can evaluate the quality of a particular concept of education. So, the purpose of creating various didactic situations is only to direct this process towards solving the learning tasks offered to students using certain external conditions.

In other words, the situation, the learning task, the methodological techniques are designed to "launch" the mechanism of thinking.

References

1. Webb, G. Organisational Approaches to Staff Development to Support Teaching and Learning / G. Webb, D. Murphy // Teacher development: an international journal of teacher's professional development. 1997. – No. 4 (1), pp. 15–29.
2. Bukhhalo S.I., Bilous O.V., Demidov I.M. Rozrobka kompleksnogo antioksidantu iz ekstraktiv listja gorihu volos'kogo to kalenduly Vostochno-Evropejskij zhurnal peredovyh tehnologij. No.1/6(73), (2015), pp. 22–26. Harkiv: tehnologicheskij cent.
3. Tovazhnyansky L.L., Meshalkin V.P., Kapustenko P.O., Bukhhalo S.I. Energy efficiency of complex technologies of phosphogypsum conversion. Theretical Foundations of Chemical Engineering. Vol. 47, No. 3, (2013), pp. 225–230.
4. Bukhhalo S.I., Klemeš J.J., Tovazhnyansky L.L., Arsenyeva O.P., Kapustenko P.O., Perevertaylenko O.Y. Eco-friendly synergetic processes of municipal solid waste polymer utilization. Chemical Engineering Transactions, Vol. 70, (2018), pp.2047–2052.
5. Ageicheva A., Hunchenko Yu. Grammar Peculiarities of Scientific and Technical Translation in Construction Sphere. International Journal of Engineering&Technology, 7 (3.2) (2018), pp. 559–562.
6. Bukhhalo S.I., Ageicheva A. Complex projects development problems. Інформаційні технології: наука, техніка, технології, освіта, здоров'я: тези доповідей XXVII Міжн. н-практ. конференції (MicroCAD-2019), 15-17 мая 2019 р.: у 4 ч. Ч. II. / за ред. проф. Сокола Є.І. – Харків: НТУ «ХП». С. 220.
7. Бухкало С.І. Деякі питання роботи вісника НТУ «ХП» серія Інноваційні дослідження у наукових роботах студентів. Інформаційні технології: наука, техніка, технології, освіта, здоров'я: тези доповідей XXVII Міжн. н-практ. конференції (MicroCAD-2019), 15-17 мая 2019 р.: у 4 ч. Ч. II. / за ред. проф. Сокола Є.І. – Харків: НТУ «ХП». С. 218.
8. Bukhhalo S.I., Ageicheva A. Complex projects competence development. Інформаційні технології: наука, техніка, технології, освіта, здоров'я: тези доповідей XXVII Міжн. н-практ. конференції (MicroCAD-2019), 15-17 мая 2019 р.: у 4 ч. Ч. II. / за ред. проф. Сокола Є.І. – Харків: НТУ «ХП». С. 193.
9. Бухкало С.І. Висновки з діяльності майстер-класу. Інформаційні технології: наука, техніка, технології, освіта, здоров'я: тези доповідей XXVII Міжн. н-практ. конференції (MicroCAD-2019), 15-17 мая 2019 р.: у 4 ч. Ч. II. / за ред. проф. Сокола Є.І. – Харків: НТУ «ХП». С. 219.
10. Бухкало С.І., Ольховська О.І., Іглін С.П., Зіпунніков М.М. Можливості розвитку комплексних екологічнобезпечних проектів утилізації-модифікації. 2018. – Вісник НТУ «ХП». Х.: НТУ «ХП». № 18 (1294). – С. 3–9.
11. Прищенко О.П., Черногор Т.Т., Бухкало С.І. Деякі особливості проведення кореляційного аналізу. Інформаційні технології: наука, техніка, технології, освіта, здоров'я: тези доповідей XXVII Міжн. н-практ. конференції (MicroCAD-2019), 15–17 мая 2019 р.: у 4 ч. Ч. II. / за ред. проф. Сокола Є.І. – Харків: НТУ «ХП». С. 320.

12. Сирку М.А., Бухкало С.І., Іглін С.П., Мірошніченко Н.М., Шкредов І.С., Пахнута М.І., Шевчук Т.Р. Питання комплексного визначення властивостей сировини у межах курсових проєктів. Інформаційні технології: наука, техніка, технології, освіта, здоров'я: тези доповідей XXVII Міжн. н-практ. конференції (MicroCAD-2019), 15–17 мая 2019 р.: у 4 ч. Ч. II / за ред. проф. Сокола Є.І. – Харків: НТУ «ХПІ». С. 342.
13. Ситник В.В., Яценко Б.С., Бухкало С.І., Сирку М.А., Касьян А.С., Оса О.В. Визначення експериментальних властивостей сировини у межах курсових проєктів. Інформаційні технології: наука, техніка, технології, освіта, здоров'я: тези доповідей XXVII Міжн. н-практ. конференції (MicroCAD-2019), 15–17 мая 2019 р.: у 4 ч. Ч. II / за ред. проф. Сокола Є.І. – Харків: НТУ «ХПІ». С. 343.
14. Товажнянський Л.Л., Бухкало С.І., Зіпунніков М.М. та ін. Загальна технологія харчової промисловості у прикладах і задачах (інноваційні заходи): Підручник. – К.: ЦНЛ, 2013. – 352 с.
15. Бухкало С.І. Визначення загальної технології комплексних курсових проєктів. Інформаційні технології: наука, техніка, технології, освіта, здоров'я: тези доповідей XXVII Міжн. н-практ. конференції (MicroCAD-2019), 15–17 мая 2019 р.: у 4 ч. Ч. II / за ред. проф. Сокола Є.І. – Харків: НТУ «ХПІ». С. 217.
- r.: у 4 ч. Ч. II / за ред. проф. Сокола Є.І. – Харків: НТУ «ХПІ». С. 220.
7. Buhkalo S.I. Dejaki pitanja roboti visnika NTU «HPI» serija Innovacijni doslidzhennja u naukovih robotah studentiv. Informacijni tehnologii: nauka, tehnika, tehnologii, osvita, zdorov'ja: tezi dopovidej HHVII Mizhn. n-prakt. konferencii (MicroCAD-2019), 15-17 maja 2019 r.: u 4 ch. Ch. II / za red. prof. Sokola E.I. – Harkiv: NTU «HPI». S. 218.
8. Buhkalo S.I., Ageicheva A. Complex projects competence development. Informacijni tehnologii: nauka, tehnika, tehnologii, osvita, zdorov'ja: tezi dopovidej HHVII Mizhn. n-prakt. konferencii (MicroCAD-2019), 15-17 maja 2019 r.: u 4 ch. Ch. II / za red. prof. Sokola E.I. – Harkiv: NTU «HPI». S. 193.
9. Buhkalo S.I. Visnovki z dijnal'nosti majster-klasu. Informacijni tehnologii: nauka, tehnika, tehnologii, osvita, zdorov'ja: tezi dopovidej HHVII Mizhn. n-prakt. konferencii (MicroCAD-2019), 15-17 maja 2019 r.: Ch. II/za red. prof. Sokola E.I. – Kharkiv: NTU «KhPI». S. 219.
10. Buhkalo S.I., Ol'hov'ska O.I., Iglin S.P., Zipunnikov M.M. Mozhlivosti rozvitku kompleksnih ekologichnobepechnih proektiv utilizacii-modifikacii. 2018. – Visnik NTU «HPI». H.: NTU «KhPI». № 18 (1294), pp. 3–9.
11. Prishhenko O.P., Chernogor T.T., Buhkalo S.I. Dejaki osoblivosti provedennja koreljacijnogo analizu. Informacijni tehnologii: nauka, tehnika, tehnologii, osvita, zdorov'ja: tezi dopovidej HHVII Mizhn. n-prakt. konferencii (MicroCAD-2019), 15–17 maja 2019 r.: Ch. II / za red. prof. Sokola E.I. – Harkiv: NTU «KhPI». P. 320.
12. Sirku M.A., Buhkalo S.I., Iglin S.P., Miroshnichenko N.M., Shkredov I.S., Pahnutova M.I., Shevchuk T.R. Pitanja kompleksnogo viznachennja vlastivostej sirovini u mezhah kursovih proektiv. Informacijni tehnologii: nauka, tehnika, tehnologii, osvita, zdorov'ja: tezi dopovidej HHVII Mizhn. n-prakt. konferencii (MicroCAD-2019), 15–17 maja 2019 r.: u 4 ch. Ch. II / za red. prof. Sokola E.I. – Harkiv: NTU «KhPI». P. 342.
13. Sitnik V.V., Jacenko B.S., Buhkalo S.I., Cirku M.A., Kas'jan A.S., Osa O.V. Viznachennja eksperimetal'nih vlastivostej sirovini u mezhah kursovih proektiv. Informacijni tehnologii: nauka, tehnika, tehnologii, osvita, zdorov'ja: tezi dopovidej HHVII Mizhn. n-prakt. konferencii (MicroCAD-2019), 15–17 maja 2019 r.: Ch. II / za red. prof. Sokola E.I. – Harkiv: NTU «KhPI». P. 343.
14. Tovazhnjanskij L.L., Buhkalo S.I., Zipunnikov M.M. ta in. Zagal'na tehnologija harchovoi promislovosti u prikladah i zadachah (innovacijni zahodi): Pidruchnik. – K.: CNL, 2013. – 352 p.
15. Buhkalo S.I. Viznachennja zagal'noi tehnologii kompleksnih kursovih proektiv. Informacijni tehnologii: nauka, tehnika, tehnologii, osvita, zdorov'ja: tezi dopovidej HHVII Mizhn. n-prakt. konferencii (MicroCAD-2019), 15–17 maja 2019 r.: u 4 ch. Ch. II / za red. prof. Sokola E.I. – Harkiv: NTU «KhPI». P. 217.

Bibliography (transliterated)

1. Webb, G. Organisational Approaches to Staff Development to Support Teaching and Learning / G. Webb, D. Murphy // Teacher development: an international journal of teacher's professional development. 1997. – No. 4 (1), pp. 15–29.
2. Buhkalo S.I., Bilous O.V., Demidov I.M. Rozrobka kompleksnogo antioksidantu iz ekstraktiv listja gorihu volos'kogo to kalenduly Vostochno-Evropskij zhurnal peredovyh tehnologij. No.1/6(73), (2015), pp. 22–26. Harkiv: tehnologicheskij cent.
3. Tovazhnyansky L.L., Meshalkin V.P., Kapustenko P.O., Buhkalo S.I. Energy efficiency of complex technologies of phosphogypsum conversion. Theretical Foundations of Chemical Engineering. Vol. 47, No. 3, (2013), pp. 225–230.
4. Buhkalo S.I., Klemeš J.J., Tovazhnyansky L.L., Arsenyeva O.P., Kapustenko P.O., Perevertaylenko O.Y. Eco-friendly synergetic processes of municipal solid waste polymer utilization. Chemical Engineering Transactions, Vol. 70, (2018), pp.2047–2052.
5. Ageicheva A., Hunchenko Yu. Grammar Peculiarities of Scientific and Technical Translation in Construction Sphere. International Journal of Engineering&Technology, 7 (3.2) (2018), pp. 559–562.
6. Buhkalo S.I., Ageicheva A. Complex projects development problems. Informacijni tehnologii: nauka, tehnika, tehnologii, osvita, zdorov'ja: tezi dopovidej HHVII Mizhn. n-prakt. konferencii (MicroCAD-2019), 15–17 maja 2019 r.: u 4 ch. Ch. II / za red. prof. Sokola E.I. – Harkiv: NTU «KhPI». P. 217.

Received 17.06.2019

Відомості про авторів / Сведения об авторах / About the Authors

Zotyeva Galyna (Зотьєва Галина Олексіївна, Зотьєва Галина Алексеевна) – викладач спеціальних дисциплін Коледж нафти і газу Полтавського національного технічного університету імені Юрія Кондратюка, e-mail: zotyeva@i.ua +380957178381; Ukraine; ORCID: <http://orcid.org/0000-0002-7312-5408>

Vyrsta Yaroslav (Вирста Ярослав Ярославович, Вирста Ярослав Ярославович) викладач спеціальних дисциплін Коледж нафти і газу Полтавського національного технічного університету імені Юрія Кондратюка, vyrsta@i.ua +380957486889; Ukraine; ORCID: <http://orcid.org/0000-0002-0787-6414>