



## THE ORGANIZATION OF THE UNIVERSITY EDUCATIONAL PROCESS IN TERMS OF DIGITALIZATION OF EDUCATION

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### Abstract

**Purpose:** The paper deals with the optimization of the preparation of educational professional programs of higher education to the processes of accreditation and licensing.

**Methodology:** In this paper, we will consider technical tools that optimize the organization of the management of the university's educational process in the conditions of the “digitalization” of education.

**Result:** Since the verification of compliance of University educational programs with the requirements of Federal state educational standards is carried out in the process of accreditation examination, it is necessary to optimize the organization of management of the educational process of the University on the basis of computer equipment and software.

**Applications:** This research can be used for universities, teachers, and students.

**Novelty/Originality:** In this research, the model of the organization of the university educational process in terms of digitalization of education is presented in a comprehensive and complete manner.

**Keywords:** *education, digitalization of education, higher education, licensing, accreditation, educational process.*

### INTRODUCTION

Currently, the main goal of the development of the educational sphere is to improve the quality of education. Its implementation is possible by solving such problems as optimizing the content and creating specialized educational standards. Today in the world there are several approaches to solving these problems. Fundamentally, the approaches differ depending on whether the education system is centralized in a particular country of the world or not. In Russia, as well as in France, Italy, Japan or China, standardization of the sphere of education is maximum. An example of decentralized countries in the USA, UK, and Canada. In these countries at the state level do not develop education standards. This problem is solved in the United States - the states or counties, in Canada - the provincial ministries. In foreign countries, standards mainly determine the content of education, and in Russia standards represent a set of requirements that are mandatory for the implementation of basic professional educational programs ([Lobão, J., & Pereira, C. 2016](#)).

It should be noted that educational activities in many countries of the world begin with licensing. The applicant must prove that the conditions for the implementation of the educational process meet the requirements. Basically, these requirements relate to premises, their technical equipment, fire, and physical security, sanitary standards, provision of literature and staff of teachers. In Russia and Eastern Europe, licensing affects all educational institutions. In a number of countries, only private educational organizations are subject to licensing, since it is believed that state and municipal organizations are sufficiently controlled by the founder ([Kovacova, L., & Vackova, M. \(2015\)](#)). In some countries, licensing is of a notification nature and occurs automatically in the process of registration of a legal entity. For example, in France, after submitting documents for registration of an educational organization, the authorities conduct various kinds of checks for thirty days, according to the results of which the organization can be established or not.

Another example is the countries where teachers' licensing is differentiated from the requirements for premises and facilities of an educational organization. In this case, the pedagogical “license” is similar to the certification of teachers in Russia. Not all countries in question have a state accreditation procedure, which explains the presence in licensing criteria not only of the requirements for the safety of the educational process and staffing but also for the content of education and its quality.

In countries where there is a distinction between licensing control and accreditation procedures, several separate accreditation models have emerged. For example, the “English” model focuses on the internal self-esteem of the university academic community. The “French” model is characterized by an external assessment of the school by the state and society. The “American” model combines the ideas of the “English” and “French” models. The “Russian” accreditation model in 1992 began to take shape in our country. We can distinguish several stages in the development of the “Russian” model: 1995 - 2004. - stage of formation, 2004 - 2009. - the stage of Europeanization, from 2009 to the present - the stage of differentiation. In 2002, the first accreditation agencies for public and public accreditation appeared. In 2012, Russia became a member of the Washington Agreement, which was an important step in recognizing

Russian education abroad. In addition to the above-mentioned accreditation models, there is international accreditation. It refers to the examination of educational programs by an international agent, whose decisions are recognized internationally ([Machado, A. D. B., Souza, M. J., & Catapan, A. H. 2019](#)).

It should be noted that in the Russian conditions alternative forms of accreditation, except for the state, did not find much popularity. This is explained by the fact that state accreditation gives the right to a significant level of preferences on the part of the state both to an educational organization and to students. Public or international accreditation is a voluntary procedure, and, accordingly, it does not provide any additional rights and privileges from the state ([Pucciarelli, F., & Kaplan, A. \(2016\)](#)).

As part of this work, we will not analyze the effectiveness of a particular model of licensing and accreditation. We only note that at the current time, the system of licensing and accreditation in Russia, in our opinion, is too formalized and bureaucratic. Every year it becomes more and more difficult. Constantly introductory regulatory documentation. The verification procedure is as bureaucratic as possible, but not always - this is bad. Regional universities received a clearer wording of the norms and rules of the organization, there were improvements in the planning of the educational process, the implementation of project management. At the same time, the negative aspects include the loss of academic freedom of universities, a significant complication of the regulatory documentation and rules of its management, which leads to a loss of time for the teaching staff in the process of its execution. This ultimately affects the quality of the educational process ([Zare, Z. 2015; Bakhshandeh, M., Sedrposhan, N., & Zarei, H. 2015](#)).

## METHODOLOGY

Today, the process of passing the state accreditation procedure consists of several stages. At the first stage, validation of information common to all educational programs is carried out, documents regulating educational and financial activities of an educational institution, documents of an independent examination of the quality management system (if available) are checked ([Alonso, F., López, G., Manrique, D., & Viñes, J. M. \(2005\)](#)).

In the second stage, the verification of the accuracy of the information on each educational program applied for accreditation is carried out. If, as a rule, the teaching staff is not involved in the preparation of documents for the first stage, the preparation of documents for the second stage takes considerable time from the teachers (8) Selwyn, N. (2014). The description of educational programs, curricula, calendar schedules, evaluation funds, work programs of disciplines, practices and other documents are checked. In the early years of accreditation checks, these documents were poorly formalized, which opened up additional possibilities for programmers to describe the program in “creativity”, and, on the other hand, the expert’s opinion, rather than legislative acts, was decisive because there were no clear rules for drafting and document checks. At the same time, the present level of formalization of the above documents does not give 100% confidence in their quality of preparation before the arrival of the expert commission, although it allows us to think about the need to implement certain technologies that automate the process, since the information contained in some documents should absolutely correlate with the information specified in others. And since the expert in his work, first of all, evaluates the quality of the preparation of documents, in this situation it is almost impossible to do without the help of technology and relevant software ([Garrison, D. R., & Kanuka, H. \(2008\)](#)).

At the third stage of the accreditation examination, the compliance of the educational program with the requirements of the federal state educational standards (FSSES) is checked: among other things, the study journals, the final attestation program, the journals of documents issued, individual plans and reports of teachers, test books, statements, examples of works students, exam tickets, etc. Naturally, all the above documents should correspond as closely as possible to the information, in documents checked at the second stage. Due to the fact that the accreditation body, in accordance with part 23 of article 92 of the Federal Law “On Education in the Russian Federation”, refuses to state accreditation of an organization conducting educational activities, if there is one of the following reasons: identifying false information in documents submitted by the organization, carrying out educational activities or the presence of a negative conclusion of the expert group, any error in the documents submitted to the experts, can be fatal. On the other hand, to ensure a high level of preparation of documents, without using any automation tools, it is almost impossible and there are many reasons for this. First, a large number of educational programs in educational institutions (it is especially “surprising” that many programs differ from each other only by their name, and the content is either not at all different or only slightly different ([Novikova, I. N., Popova, L. G., Shatilova, L. M., Biryukova, E. V., Guseva, A. E., & Khukhuni, G. T. 2018; Nisawa, Y. 2018](#))). But in any case, if the programs are declared, then the whole complex of regulatory documentation on them must exist and be updated, which significantly complicates the work, first of all, of the teaching staff and increases the possibility of errors in the preparation of documentation. Secondly, without the use of modern electronic document management systems, it is almost impossible to achieve a situation in which not only documents are issued on time, but also with a high level of quality. The more complex the organizational structure of an educational institution, the longer the workflow cycle and the lower it's quality. Thirdly, a number of functions of modern educational institutions are, as a rule, automated. For example, electronic information and educational environment should be formed. But, at the current time, many e-learning platforms, on the basis of which electronic information-educational environments are based, do not have integration models with other educational systems, which

may lead to disagreement between the data presented to the expert and placed in the information environment [Latyshev, O., Terziev, V., & Arabska, E. \(2017\)](#).

In connection with the above, in this paper, we will consider technical tools that optimize the organization of the management of the university's educational process in the conditions of “digitalization” of education [Pfeffer, T. \(2011\)](#).

## RESULTS

The process of describing an educational program begins with the creation of a curriculum. The curriculum is a document defining the list, laboriousness, consistency and distribution of training subjects, courses, disciplines (modules), practice, other types of training activities and, unless otherwise provided by the Federal Law on Education, forms of intermediate certification of students [Khan, M. S. H., Hasan, M., & Clement, C. K. \(2012\)](#).

Наименование	Блок/часть	Экз. мен	Зачет	Зачет с оц.	КР	Экспертное	Факт	Курс 1																	
								Сем. 1 [18 нед]			Сем. 2 [18 нед]			Сем. 3 [18 нед]											
								Итого	Лек	Пр	СР	Итого	Лек	Пр	СР	Итого	Лек	Пр	СР						
Итого ЗЕТ/Часов (без факультативов)								141	141	28	1062	180	306	468	108	32	1206	54	126	990	36	30	1134	108	864
Недельная нагрузка в семестрах (час/нед)											53				53				54						
Объем контактной работы в семестрах (час/нед)											24				7				3						
ЗЕТ на курсах (без факультативов)														60											

Figure 1: Plans for HE

Theoretically, you can create a curriculum in Microsoft Excel. A few years ago, all curriculum developers generally used this software product. In the process of developing the curriculum, the author understood that certain requirements of standards and other regulatory documents “fit” perfectly well into the language of the Microsoft Excel form. Over time, specialized software solutions began to appear that significantly expanded the capabilities of the curriculum author. The software appeared automatically checking the compliance of curricula with regulatory documents. One of such software solutions is the information system “Plans”, developed by the MMIS laboratory (the city of Shakhty).

The curricula created in the “Plans” system (Figure 1) are fully compatible with the format used in the state accreditation procedure. This application includes a set of formalized FSES, which can be used to create curricula based on them and check their quality. The application supports the creation of curricula for the following levels of education: specialty, bachelor, master's degree, full-time, part-time and part-time forms of education (GOS, FSES-3, FSES-3 + and FSES-3 ++); postgraduate full-time and distance learning (FES and FSES-3 +); internship and residency full-time education (FES and FSES-3 +) and assistant-internship full-time education (FSES-3 +). The undoubted advantage of the application is that it has actually become the standard “de facto” in the framework of the creation, editing, and distribution of curricula. Unfortunately, this advantage can simultaneously be the main drawback of the application. The fact is that the organization developing the application is commercial and has no relation to the authors of legislative documents in the field of curriculum development. In this regard, the application, sometimes, “does not have time” for new developments in the field of curriculum design. It is not uncommon for an educational organization to have real problems in the accreditation process due to deep hope in the “infallibility” of this software solution.

In addition to the “Plans” software product, the MMIS laboratory develops a whole range of information systems that almost completely automate the planning and maintenance of the educational process. Unfortunately, the other modules of the system are not so common, most likely due to the fact that unlike the “Plans” program, they are quite strongly connected with the workflow system of a particular educational institution and cannot be adopted without serious consequences to the requirements of other universities.

The developers of the automated information system “1C: University” from the company “SGU-Infocom” tried to overcome the problems with the lack of universality (Figure 2). This solution is intended to automate the management of educational institutions, including such modules as: admission campaign, educational process, schedule, contingent, employment, tuition fees, research part, postgraduate study, dissertation councils, pre-university and additional education, university campus, private offices (incoming, student, teacher). This software product is included in the Unified Register of Russian programs for electronic computers and databases.

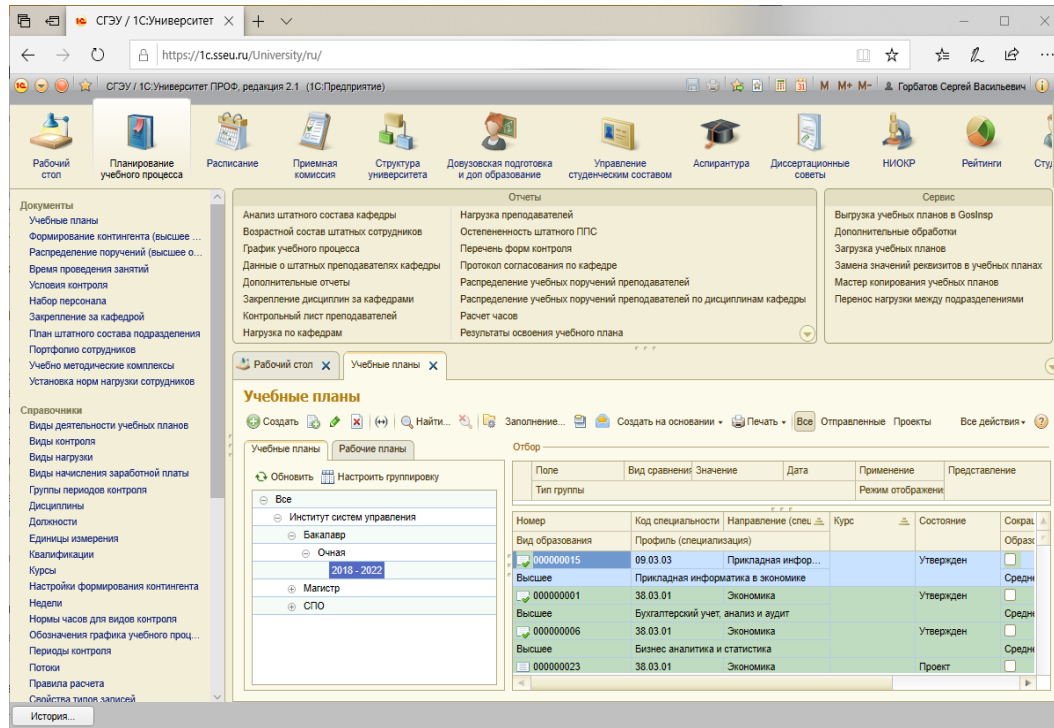


Figure 2: Information system "1C: University PROF"

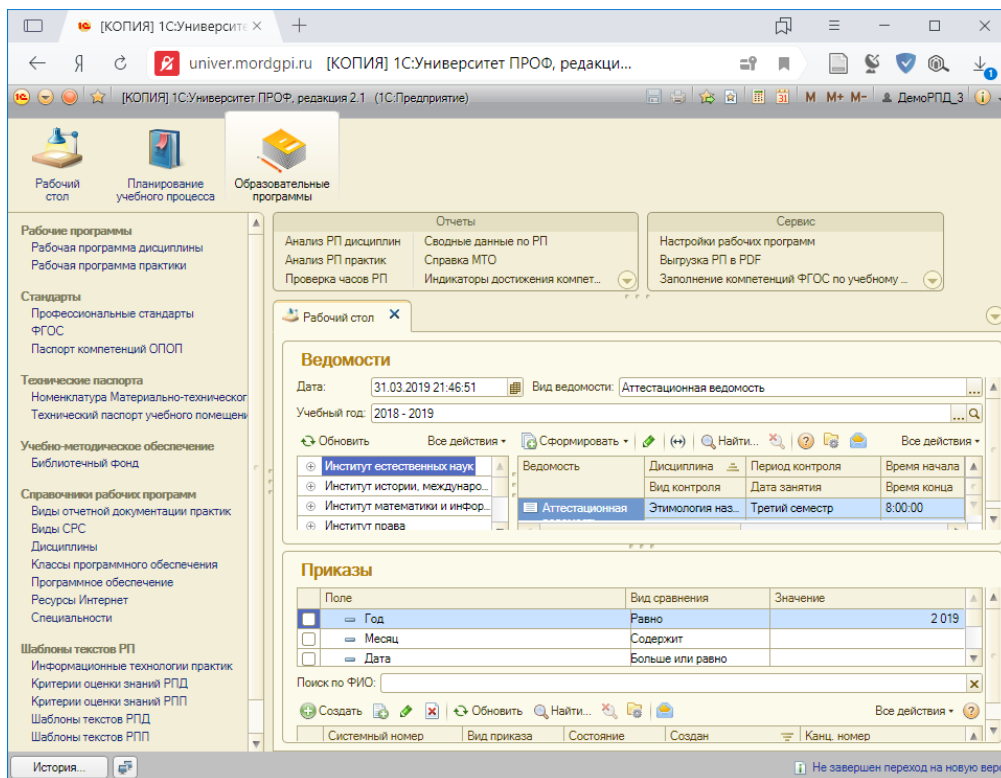
The application is based on the “1C: Enterprise” platform, which allows not only to make significant changes to the application independently but also, without great expense, allows modifying the configuration and integrating the modules necessary for a particular educational institution into it. The program distribution model is built on this feature. If you compare the software “1C: University” with developments in other areas, it is most similar to those or other application programming interfaces (eng. Application programming interface, API). After the purchase and installation of the program immediately work in it is quite difficult. The organization needs to develop the solution “by itself” using its own resources or with the help of external organizations. The modules included in the default application are as versatile as possible. For example, the Study Plans module can import data from the Plans program into itself. The high degree of adaptation for typical educational institutions is the modules "Planning of the educational process", "Admission Committee", "University structure". The remaining modules need to be refined with varying degrees of complexity [Skiba, D. J. \(1997\)](#).

On the other hand, this information system can be taken as a basis for electronic information and educational environment of almost any level of complexity. To date, the information system “1C: University” developed many commercial additions. An example of this is the support module for paid tuition or the module for automatic generation of work programs for disciplines (Figure 3). This module provides an automated development of the documentation support for the description of the educational program in the framework of the AIS “1C: University of Trade”. Automates the process of preparing complexes of work programs for disciplines (practices) according to educational programs of an educational institution. A single (controlled) database of work programs with the possibility of automatic generation of consolidated reporting is being formed. The subsystem provides access to the data of the work program complex, in accordance with the division of rights, printing of work programs as a whole, individual sections and annotations. The system is able to automatically transfer data from the curriculum, FSES and professional standard in the work program. In addition, the program imports information from work programs developed earlier. At the end of the program can generate a full range of work programs in PDF format for posting on the web server of the institution.

A distinctive feature of the system is a clear "mathematical" orientation. The logic of the system tries to connect such entities as: FSES, professional standards, passport of competencies, material and technical equipment, and library stock. A separate advantage of the system is an attempt to reduce the role of the teacher in the process of creating work programs. According to the authors, the role of teachers is reduced by at least 70%. This indicator is achieved due to the



fact that the relevant part of the educational organization must perform a significant part of the system maintenance work.



**Figure 3:** The module of the formation of work programs of disciplines in the AIS "1C: University of Trade"

As we noted above, an important aspect in the process of accreditation verification is the determination of the compliance of the educational program with the requirements of the FSSES. The "1C: University" platform can also help in automating these tasks (Figure 4).

Let us consider an example of the integration of the Moodle learning management system with the 1C: University PROF platform on the example of the Master's program in the field of study preparation 44.04.01 Pedagogical education. We have developed a specialized extension for the 1C: Enterprise platform, which allows you to automatically create catalogs of educational materials in the Moodle system. In the catalog, electronic courses are formed, access to which is provided to specific groups of students and teachers of relevant departments. Each electronic course hosts a forum for interaction between the participants of the educational process, blanks for placing test materials and tasks with automatic verification of reports in the Antiplagiats system. All materials placed in the system are automatically integrated into the student portfolio (Figure 5) [Martin, W. \(1999\).](#)

As a development of the system, it is planned to develop an automated mechanism for synchronizing grades in the 1C: University PROF system and estimates for e-courses in the electronic information and educational environment.

## CONCLUSION

As conclusions, it is worth noting that the state of the processes of licensing and accreditation of educational activities in Russia requires systematic improvement. At the current time, it is very difficult for educational organizations to form a given level of regulatory documentation without the use of information technology tools. Changes in the interpretation of certain documents in the course of the life cycle of educational standards lead to the need to change the organization of the management of the educational process, which, in terms of digitalization of education, must be implemented using modern software solutions. But to achieve the implementation of these software solutions is possible only after optimizing the process of developing university documentation. The ideal option, at the first stage, can be the development of a model of the relationship between all the documents governing the educational process.

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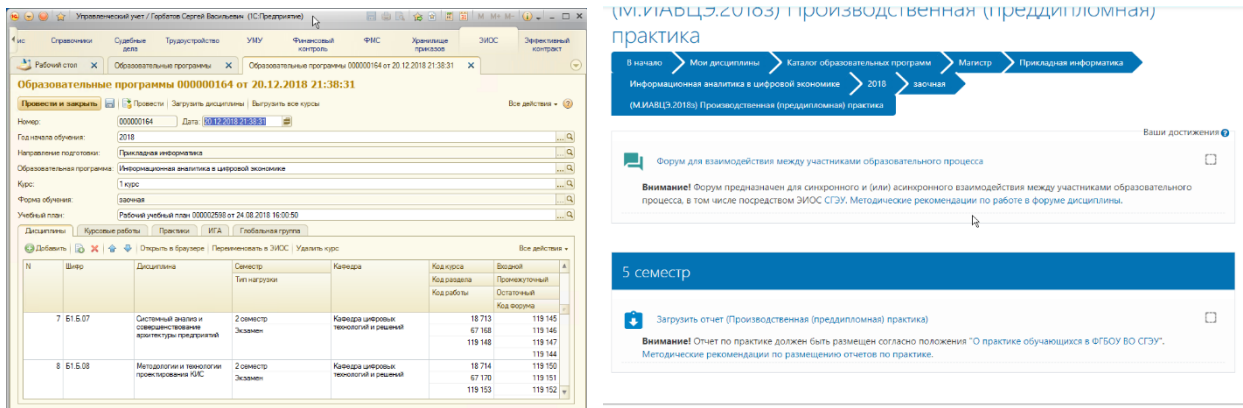


Figure 4: IC integration example: University and LMS Moodle

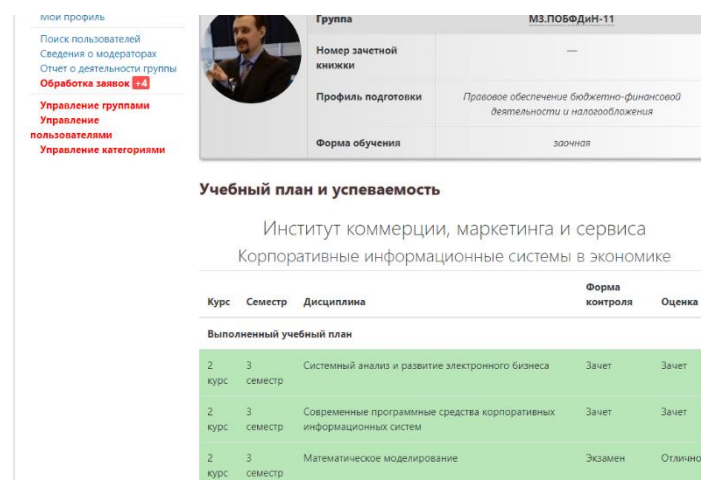


Figure 5: Forming a student's portfolio

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