

УДК 378.1

doi:10.18720/SPBPU/2/id23-433

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PROBLEMS AND PECULIARITIES OF PREPARING FOREIGN NATIONALS FOR GRADUATE AND POSTGRADUATE STUDIES

Abstract. Based on the statistical analysis of the personal data of the BMSTU pre-masters and the created classification, taking into account the review of the work of preparatory faculties of leading universities that train pre-masters, as well as the review of gaps in bachelor's degree training in foreign countries, the principles have been developed for determining the structure and content of educational programs, the formation of curricula and groups of pre-masters. A unique multidimensional matrix of individualization of educational programs has been developed. Examples of curricula developed on its basis are given.

Effective forms of extracurricular work with pre-masters aimed at their socio-cultural and academic adaptation through scientific activities are shown. The range of tasks that the university must solve in order to ensure the most effective preparation of pre-masters for admission and successful training for a master's degree is determined.

Key words: preparatory department, individual curriculum, educational trajectory, master's programs, postgraduate programs.

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ПРОБЛЕМЫ И ОСОБЕННОСТИ ПОДГОТОВКИ ИНОСТРАННЫХ ГРАЖДАН К ОБУЧЕНИЮ В МАГИСТРАТУРЕ И АСПИРАНТУРЕ

Аннотация. На основе статистического анализа персональных данных предмагистрантов МГТУ, с учетом обзора деятельности подготовительных факультетов ведущих вузов и анализа пробелов обучения в бакалавриате зарубежных университетов разработаны принципы структуры и содержания образовательных программ, а также формирования учебных планов групп предмагистерской подготовки. Вводится уникальная многомерная матрица индивидуализации образовательных программ. Приведены примеры учебных программ, разработанных на ее основе.

Автор показал эффективные формы внеаудиторной работы с предмагистрантами, направленные на их социокультурную и академическую адаптацию посредством вовлечения в научную деятельность. Определен круг задач, которые должен решить вуз, чтобы обеспечить наиболее эффективную подготовку предмагистрантов к поступлению и успешному обучению в магистратуре.

Ключевые слова: подготовительное отделение, индивидуальный учебный план, образовательная траектория, магистратура, аспирантура.

Introduction. Training foreign nationals in master's and postgraduate programs is the most prestigious, but also the most difficult task for any university. The relevance of this task is reflected in the goals and indicators of the federal program «Priority – 2030».

The analysis of the contingent of foreign nationals has shown that about half of them study in master's and postgraduate programs at 48 departments of Bauman Moscow State Technical University. Foreign students represent 74 countries in Europe, Asia, Africa, North and South America. The number of such students and the countries they represent increases every year. The overwhelming majority of those arriving for master's degree training do not know Russian, which is the working language of instruction, or speak it partially, and are not adapted to the learning environment. They belong to different language groups, have different mentality, have different

motivation and have different learning goals. These so-called pre-masters have obtained their bachelor's degrees in their own countries, which have their own educational standards and learning paradigms. They belong to different age groups; some of them have a break in their studies. During the Covid-19 pandemic, uncertainties about the arrival time of pre-masters make it necessary to alternate between face-to-face and distance or blended learning. Thus, preparing students for successful enrollment and master's studies requires a systematic approach based on the study of individual characteristics of students, selection and optimization of teaching methods and curriculum content [1–3].

Research objectives. The main task is to find such forms, methods of teaching and develop programs of teaching the Russian language, which would allow within a limited time and taking into account the individual characteristics of students to reach the level of B2 (TRKI-2), including mastering the scientific language. Another important task is to determine the most effective way of students' sociocultural and learning adaptation in a language and cultural environment that is foreign to them. It is of great importance to study, based on the statistical analysis of the student data, the most typical gaps in the competences of pre-masters related to their previous basic and professional education and to form the subject areas and the content of training at the preparatory department. The ultimate goal is to develop the structure and content of curricula and principles for the formation of study groups of pre-masters.

Research methods. Personal data of foreign nationals, as well as their success in studying at the preparatory department, in the master's and postgraduate programs of BMSTU over the past 10 years have been analyzed. At the same time, citizenship, the initial level of proficiency in the Russian language, the content and level of training in bachelor's degree programs, the chosen field of study for a master's degree, etc. have been taken into account. The work and training programs of preparatory departments (faculties) of leading universities, such as TPU, RUDN, SPbPU, MADI and others with significant experience in preparing pre-masters, have been studied. The features of educational standards,

the content of bachelor's degree programs and the organization of the educational process in the countries providing the most significant influx of pre-masters have been analyzed.

Results. Based on the results of the analysis of the data obtained, it was concluded that successful training of a diverse contingent of foreign nationals is possible only with maximum consideration of all factors and individual characteristics of students, maximum individualization of the learning process. In the context of the ongoing and developing Covid-19 pandemics with varying intensity in different countries, when there are constant changes with the opening and closing of borders, the state of transport communication between states, when forming study groups and class schedules, it is necessary to use face-to-face, mixed and distance learning formats flexibly, and also take into account different time zones of states.

It was decided that students should be separated according to their initial level of the Russian language proficiency based on the entrance test, in which various language elements are used in the sections: writing, speaking, listening, written reproduction, and reading.

As a result, the following principles of forming study groups and curricula were formulated:

- objective determination of the initial data and the requests of a pre-master student;
- taking into account the possibilities of communication, available technical and software tools for distance learning;
- maximum possible individualization of the learning trajectory;
- learning Russian is not an end in itself, but a means for successful mastering of engineering programs and obtaining the necessary competencies;
- flexible response to changes in external conditions;
- compliance with the requirements of external and internal regulations;
- consideration of economic factors of learning.

Taking into account the above-mentioned principles, a unique multidimensional matrix of educational programs, including individual or individualized curricula for the students of the Preparatory Department of the Faculty of International Educational Programs of the University was developed (Fig. 1).

Differentiation of educational programs at PD FIEP

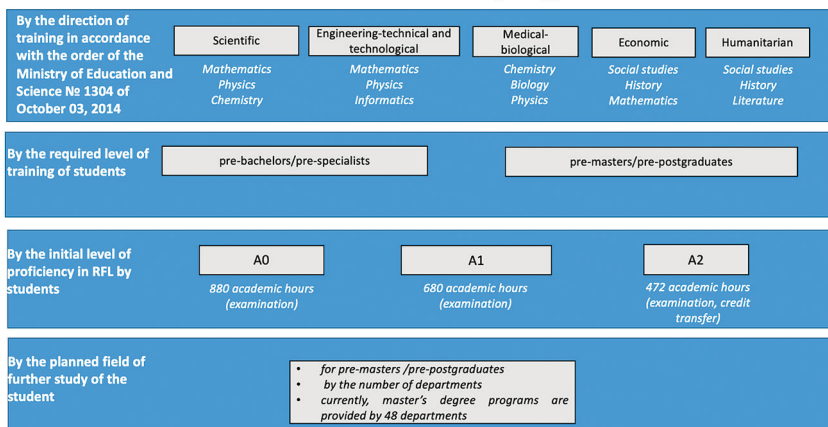


Fig. 1. Matrix of educational programs

Despite the fact that the economic factor does not make it possible to fully individualize training, we managed to achieve an average group size of 10 people, taking into account a high degree of individualization and economic payback of training. At the same time, we do not allow more than 12 students in a group, while, due to the need to take into account individual requirements, some groups may have even 3–4 students.

The still unresolved typical problem of the untimely arrival of foreign students under quotas of the Ministry of Education and Science due to delays in receiving referrals from the Ministry, obtaining visas, buying air tickets, etc., has become even more complicated during the pandemic.

In addition to those who study under quotas, there was also uncertainty about the arrival time for contract students, as they both faced the problem of closed borders and the lack of transport links with Russia.

To maintain the quality of education, we have to solve the problem by creating temporary virtual study groups, simultaneous training in face-to-face and distance modes. In such groups of students, we start the educational process on September 1 in distance mode, while for those who are in Moscow; classes are held in face-to-face mode. In some cases, when it is expedient, part of the group studies in the classroom face-to-face,

while the other part, located abroad, does it via video broadcasting. All of our classrooms have the necessary equipment for this. Naturally, mixing teaching formats leads to additional workload for the academic staff and makes the educational process more expensive.

The individual curriculum of the student is formed on the basis of analyzing their initial data and requests related to the chosen field of study and the direction of training of the department, to which he is going to enroll. Thus, besides obligatory disciplines such as Mathematics, Physics, Informatics, which are disciplines of bachelor's degree programs or special chapters of master's degree programs (for entrants to postgraduate study) of the corresponding department, Computer Graphics and the Specialty Introductory Course are added to it [3].

By the degree of motivation and readiness to choose a profession, we conditionally divided pre-masters into four categories:

1. those who have decided to study for a master's degree at BMSTU but have doubts about the field of study and educational program;

2. those who are motivated to study at BMSTU within the framework of the chosen field of study, but have not made a final choice of the educational program;

3. those who are strongly motivated to study at BMSTU and have independently chosen their field of study and educational program;

4. those who are enrolled in special programs based on international agreements with foreign partners of BMSTU.

During the first semester, those who represent the first three categories have the opportunity to learn more about the university, visit departments, consult with tutors about future career choices, and make preliminary choices by the end of the semester.

For the first two categories of students, the Specialty Introductory Course provides an opportunity to better understand whether their preliminary choices were right and to change them if necessary.

The third category is characterized by the fact that within the framework of this course the student has the opportunity not only to become acquainted with their future profession, but also to get to know the department, its scientific schools better and even choose the supervisor of their master's or PhD thesis.

At the end of the second semester all students are acquainted with the programs of entrance examinations for admission to the master's programs of the corresponding departments.

In order to take the language proficiency into account when entering the preparatory department, the Russian language and its corresponding program with dictionaries of lexical and terminological minimums and other methodological materials are included in the curriculum of a pre-master student based on the results of their testing and attestation, considering the established levels of proficiency – A0, A1, A2, B1+. In addition to the main ones, there are correctional programs, which allow to more accurately take into account the peculiarities of the language proficiency and to eliminate the gaps in the knowledge of a student [4]. Despite the fact that some of the pre-master students in our preparatory department are quite advanced and occasionally win prizes in various competitions and contests in the Russian language, we believe that, foremost, they must master those grammatical, lexical, terminological structures that will allow them to solve everyday problems, communicate with colleagues, work successfully at lectures, seminars, laboratory works, write scientific reports, do their term and diploma projects. That is, as the main task we see not just teaching Russian as such, but such training of pre-masters that will allow them to pass the entrance exams and study in the master's program in Russian successfully.

The programs that have been developed allow for both face-to-face and blended or even completely distance learning (including online formats), which is especially important in the context of the ongoing Covid-19 pandemic.

A typical pre-master's program of the preparatory department not only meets the requirements of the order №1304 of the Ministry of Education and Science from October 3, 2014, which is a kind of the only standard in this area of activity, but also takes into account individual characteristics of the student, and also includes additional disciplines, such as the Specialty Introductory Course and others (for example, some disciplines from the bachelor's degree programs of the corresponding department of BMSTU), if it is considered necessary for quality preparation for further study. Nevertheless, we believe that this is not enough.

Firstly, our students need socialization in a new environment for them: sociocultural, educational adaptation. Some of them, due to the peculiarities of their mentality, need to improve their communication skills. To do this, the Russian language study program includes elements of regional studies, museum visits, and excursions around Moscow. As extracurricular activities, such events as the «Russian House», holidays dedicated to the New Year celebration, Victory Day and others are held [3].

Secondly, master's or postgraduate studies in Russia, as in any other developed country, are focused on training scientific research skills [5]. For foreign nationals in this regard, a very important factor is the formation of a scientific style of speech. Of course, the development of the scientific style of speech and the corresponding lexical and terminological minimums is implemented with the involvement of the relevant subject departments within our Russian language study programs [4].

At the same time, we have come to the conclusion that such study can be more effective if it is tied to the solution of practical scientific problems, causes associative links among students with previous experience. As a result, over the past three years, in the second semester, after students have studied the rules for preparing scientific reports and delivering presentations, we hold a two-stage competition of students' scientific papers, where they submit a presentation of their bachelor's or master's thesis in Russian. When preparing a presentation, each of them is consulted by two lecturers – a linguist and a subject specialist. In addition to the speakers themselves, linguists and subject specialists take part in the discussion stage of the competition, which is held in a face-to-face or distance format. Everyone can ask questions and participate in the discussion. The jury consists of qualified lecturers and evaluates each report according to a number of parameters: the novelty of the topic of the work, its complexity and the quality of the results obtained, knowledge of the Russian language, the scientific style of speech, the quality of the presentation, the quality of the answers to questions. The winners of the 2nd stage, the final part of the competition, get the opportunity to be published in Scopus or RSCI indexed journals.

The fourth category of pre-masters, mentioned earlier, are participants in special programs. The advantage of such programs is that they

Code	Name of cycles, sections, disciplines	Department	Workload of cycles, sections, disciplines			Types and workload of classes				Semester 1 - 18 weeks					Semester 2 - 18 weeks				
			Total, credits	Total hours	Class hours	Lec hour	Sem hour	Lab hour	Self study hour	Workload			Credit/ Exam	Workload			Credit/ Exam		
										hour	Class hour	Self study hour		credit	hour	Class hour		Self study hour	
B1	Disciplines (modules)																		
	Compulsory part		44	1584	756	0	756	0	828	28	1008	484	524		16	576	272	304	
	Russian as a foreign language	MOP-1	44	1584	756		756		828	28	1008	484	524	exam	16	576	272	304	exam
	Part formed by the participants of the educational relations		9	324	204	102	34	31	154	2	72	34	38		7	252	136	116	
	Fundamentals of the space flight theory*	SM3	2	72	68	34	0	0	38	2	72	34	38	credit					
	Mechanics of orbital motion *, **, ***	SM3	4	144	68	34	17	17	76						4	144	68	76	exam
	Fundamentals of ballistics and aerodynamics **	SM3	3	108	68	34	17	14	40						3	108	68	40	exam
	Elective disciplines		7	252	82	0	82	0	170	2	72	30	42		5	180	52	146	
	Individual consulting	CM3	5	180	82	0	82	0	98	2	72	30	42		3	108	52	74	
	Student's scientific research work	CM3	2	72	0	0	0	0	72						2	72	0	72	
B2	Practical training sessions		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	
	Compulsory part		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	
	Educational practice		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	
	Industrial placement		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	
	Part formed by the participants of the educational relations		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	
	Educational practice		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	
	Industrial placement		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	
B3	State final examination		6	216	0	0	0	0	216						6	216	0	216	
	Preparation for the presentation of	SM3	6	216	0										6	216	0	216	
	Total workload of the main educational programme (in academic hours)		66	2376	1042	102	872	31	1368	32	1152	548	604		34	1224	460	782	
	Total workload of the main educational programme (in astronomical hours)		66	1782	782	77	654	24	1026	32	864	411	453		34	918	345	587	
	Optional disciplines		0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	

Fig. 2. A fragment of the curriculum for the training of pre-masters in a special program

make it possible to attract the most motivated students and, together with the foreign partner, to organize their preparation for master's studies at an earlier stage. As an example, below is a fragment of the curriculum for the joint training of pre-masters with the Beijing Institute of Technology (BIT) in the course of their study in the BIT bachelor's program (Fig. 2).

During the course of studying in the BIT bachelor's degree program, students selected to participate in the joint program learn the Russian language. Our «Russian as a foreign language» department participates in the training. After completing the third year at BIT, they come to BMSTU with a level B1 proficiency in Russian and continue studying it further at the preparatory department. Besides, by the

agreement with BIT, the BMSTU department teaches them 3 disciplines, necessary for completing a bachelor's degree at BIT and further study in a master's program at this department, individual consultations are provided. Students also carry out research work and bachelor's dissertation work of BIT under the guidance of academicians of the BMSTU department and in the subject areas of this department, go through the preliminary defense of the dissertation in the department. After defending the thesis at a special BIT committee, they receive a Chinese bachelor's degree. Thus, during their studies at the preparatory department they raise their level of proficiency in Russian to B2--, get acquainted with their department and not only prepare well for the entrance exams to the master's program, but also create some ground for the preparation of the master's thesis.

Discussion. The analysis carried out and the given examples of pre-master's programs show that these programs are very diverse both in content and in the forms of implementation. To the greatest extent, this applies to network learning models. The implementation of such programs can take place both within the framework of classical preparatory faculties (departments) and by hybrid methods, that is, in combination with other forms (levels) of training. At the same time, it is possible to solve the main task as efficiently as possible - high-quality preparation of pre-masters with minimal time and money. At the same time, the application of innovative teaching methods requires further improvement of the regulatory and legal framework for the activities of preparatory faculties (departments).

Conclusion. Based on the experience of Bauman Moscow State Technical University and other universities, it can be concluded that pre-master (pre-postgraduate study) is a special type of work of preparatory departments (preparatory faculties), which is largely based on the educational programs of higher education. To achieve the main goal – successful admission and training of foreign nationals in the master's (postgraduate) programs, the following tasks need to be solved:

1. Selection of a motivated and well-trained contingent.
2. Addressing the issue of sociocultural and educational adaptation of students.

3. Achievement of the B2 – Russian language proficiency level by students (including scientific style of speech).

4. Maximum possible individualization of the learning trajectory, taking into account students' specific features.

5. Elimination of significant gaps in the student's previous education.

6. Assistance to the student in choosing the right specialty.

7. Preparation of the student for entrance examinations.

8. Ensuring the economic payback of training.

This approach has shown its effectiveness at Bauman Moscow State Technical University and has allowed not only to significantly increase the chances of students entering master's (postgraduate) programs, but also for their further successful education and participation in scientific activities.

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