

*Federal State Autonomous Educational Institution of Higher Education  
«Peoples' Friendship University of Russia»*

*Academy of Engineering*

Adopted by Academic Council  
Of the Academy of Engineering  
17.12.2020  
protocol № 2022-08/04



Affirm  
First Vice Rector –  
Vice Rector for Education  
A.V. Dolzhikova  
\_\_\_\_\_ 20\_\_ г.

**Basic professional studying program of higher education**

**Direction of training (specialty)**

**09.06.01 INFORMATICS AND COMPUTER ENGINEERING**

Approved by the order of the Ministry of Education and Science of Russia Federation 12.09.2013  
№ 1061

The program was designed appropriate to requirements of ES HE RUDN that was affirmed by  
rector's decree dated 26.02.2015 № 96

Graduate's qualification: Researcher. Mentor-researcher

The direction of program (profile, specialty):

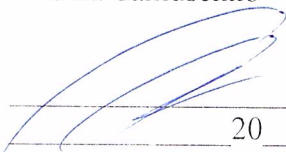
**Management in Social and Economic Systems (Technical Science)**

Form of studying - full-time

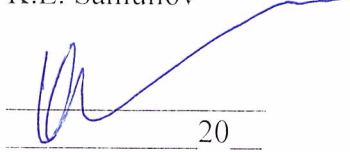
A period of program mastering - 4 years

Information about features of the implementation of the basic studying programme:  
Implemented in English

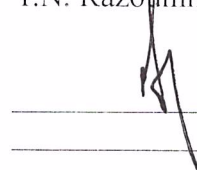
Agreed:  
Director of the programme  
O.E. Samusenko

  
\_\_\_\_\_ 20\_\_

Agreed:  
Director of MSSN  
K.E. Samuilov

  
\_\_\_\_\_ 20\_\_

Agreed:  
Director of the Institute  
Y.N. Razolmny

  
\_\_\_\_\_ 20\_\_

# Description of the curriculum

## ESHE 09.06.01 Informatics and computer engineering

### Educational program specialization - 05.13.10 Management in Social and Economic Systems

#### An Overview Education Program of High Education (EP HE)

##### 1.1. Aim (mission) EP HE

The program is focused on training of highly qualified specialists in the field of *Informatics and computer engineering* in the profile of *Management in Social and Economic Systems*. The curriculum is designed in such a way that allows students to form the most popular professional competencies at the present time. Management in social and economic systems is a specialty that deals with the tasks of development and application of management theory and modern methods to management challenges in social and economic fields, including education, law, defense, healthcare and nature protection, issues of analysis, modeling, optimization, improvement of management and decision-making mechanisms in organizational systems in order to increase the efficiency of their functioning. In the course of training, postgraduate students receive theoretical and practical training and skills of research and scientific and pedagogical work, which allow them to work effectively after completing the study of the educational program at enterprises of various spheres and branches of the economy in managerial positions, as well as in research and educational organizations.

##### 1.2. Core information

The educational program 06.09.01 Informatics and computer engineering (postgraduate level) (profile) 05.13.10 "Management in social and economic systems" is implemented in full-time in accordance with the license to carry out educational activities.

The standard term for mastering the main educational program in the direction of training a postgraduate student 09.06.01 Informatics and Computer Science on full-time basis – 4 years.

The volume of the postgraduate program is 240 credit units (hereinafter - c.u.)

The volume for one academic year is 60 c.u.

The postgraduate program is aimed at mastering all types of professional activities for which the postgraduate student is preparing.

Location - RUDN Engineering Academy (Moscow, Ordzhonikidze str., 3).

Qualification (degree) of the postgraduate in the degree diploma: Informatics and computer engineering (educational program specialization Management in social and economic systems), qualification: Researcher.

Mandatory main disciplines – basic courses, such as: foreign language, history and philosophy of science. The main disciplines of the variable part are: Methodology of scientific research, Research seminar, Pedagogy of higher education, as well as Pedagogical practice, Research practice, Research work.

The profile "Management in social and economic systems" includes a variable part with a set of disciplines at the choice of a graduate student: Management in social and economic systems / Methods of teaching informatics and computer technology in higher education / Systemic methods of management in social and economic systems / Application of information technologies in the management of social and economic systems / Actual problems of the theory of management of social and economic systems / Foreign language for academic purposes / Russian as a foreign language.

##### 1.3. Key features of the curriculum

The program is implemented without the use of a network form, without the use of distance

educational technologies, with the use of e-learning elements using the TUIS RUDN system.

In the learning process, interactive technologies are actively used, such as business games, case situations, interdisciplinary projects, practices and internships at leading enterprises in various spheres of the economy (energy, construction, mechanical engineering, etc.), educational institutions of higher professional education, scientific and research organizations.

#### **1.4. Labor market needs for graduates**

Graduates are focused at getting job and working in national and international companies, in state or commercial; educational institutions and research organizations, in various fields of economics (high-, medium-tech spheres, as well as low-tech industries).

The field of professional activity of graduates who have mastered the postgraduate program includes Science and Technology, Technology and Pedagogy, covering the set of tasks of the direction "Computer Science and Computer Technology", including the development of theory, the creation of, introduction and operation of advanced computer systems, networks and complexes, mathematical models and software.

#### **1.5. Admissions criteria**

For admission to the program, entrance tests are passed in the form of a written inter-disciplinary exam according to the rules of admission to the University for the direction 09.06.01 Informatics and computer engineering, approved by the relevant local regulatory act and placed in open access on the official website of the RUDN.

The minimum educational level required for the development of the program: higher professional education with the degree of "master" or "specialist".

#### **1.6. Overview of professional activity**

##### ***1.6.1. The field of professional activity includes:***

The area of professional activity of graduates who have mastered the postgraduate program, includes theoretical and applied studies of systemic relationships and patterns of functioning and development of objects and processes in the economy and society, taking into account industry specific features, focused on improving the efficiency of management based on the development and use of methods of management theory and decision making. The importance of solving scientific and technical problems of this specialty for the national economy consists in the development of new and improvement of existing structures, mechanisms and models of management of complex socio-economic systems in order to increase the efficiency and reliability of their functioning. A distinctive feature of this area of training is also focusing on human factor, which is expressed in the active influence of the controlled system in the process management.

Areas of activity include the development of: models for describing and evaluating the effectiveness of solving problems of management and decision-making in social and economic systems; special mathematical and software support for control systems and decision-making mechanisms in social and economic systems; identification methods in organizational systems based on retrospective, current and expert information; methods and algorithms for forecasting assessments of the effectiveness, quality and reliability of organizational systems; new information technologies in solving management problems and decision making in social and economic systems, etc.

##### ***1.6.2. The objects of professional activity are:***

The objects of professional activity are:

- theoretical and experimental research on the development and application of management theory methods to management problems in the social and economic spheres, including education, law, defense, health care and environmental protection, issues of analysis, modeling, optimization, improvement of management;

- theoretical and experimental studies of decision-making mechanisms in organizational systems in order to increase the efficiency of their functioning;
- development of mathematical models, software packages and evaluations of the effectiveness of the solution management tasks and decision-making in social and economic systems;
- improving the methods of obtaining and processing information for the tasks of managing social and economic systems;
- theoretical substantiation of management and decision making in social and economic systems.

The postgraduate program is aimed at mastering all types of professional activities for which the graduate is preparing.

When developing and implementing postgraduate programs, the scientific supervisor of the educational program focuses on the specific type (types) of professional activity for which the graduate student is preparing, based on the needs of the labor market, scientific research and material and technical resources of structural units. involved in the implementation educational program.

### ***1.6.3. Types of professional activity:***

Within the framework the training, a postgraduate student prepares for a research activities in universities, research and production enterprises of any form of property, as well as for teaching at the university.

The types of professional activities for which graduates who have mastered the postgraduate program are preparing:

- research activities in the field:
- development of programs for scientific research and technical development, preparation of assignments for research and scientific work;
- collection, processing, analysis and systematization of scientific and technical information on the topic of research, selection and justification of methods and means for solving the tasks;
- development of methods and organization of experiments and tests, analysis of their results;
- preparation of scientific and technical reports, reviews, publications based on the results of completed research;
- participation in conferences, symposia, schools, seminars, etc .;
- development of mathematical models of the investigated processes, phenomena and objects related to the professional sphere;
- protection of intellectual property objects, management of the results of research and development activities;
- teaching activity on educational programs of higher education.).

### ***1.6.4. Professional tasks:***

A postgraduate student who has mastered the postgraduate program, in accordance with the types of professional activities that the educational program is focused on, is ready to solve the following professional tasks:

The objectives of the professional activity of a graduate of a postgraduate school are:

- independent (including managerial) research activities that require extensive fundamental training in modern management areas of social and economic systems, deep specialized training in the chosen areas, possession of skills of modern research methods;
- scientific and pedagogical work in higher and secondary specialized educational institutions.

## **1.7. Requirements to the learning outcomes**

The learning outcomes of the master program are special knowledge, abilities, relevant skills and experience, which will ensure the achievement of the planned results of mastering the educational program and will characterize the stages of the formation of the following competence.

A graduate student of the postgraduate program must have the following competencies:

*Universal competencies (UC):*

- able to analyze critically and evaluate modern scientific achievements, generate new ideas when solving research and practical problems, including in interdisciplinary areas (UK-1);
- able to design and carry out complex research, including interdisciplinary, based on a holistic system-ic scientific worldview using knowledge in the field of history and philosophy of science (UK-2);
- ready to participate in the work of Russian and international research teams to solve scientific and educational problems (UK-3);
- ready to use modern methods and technologies of scientific communication in the state and foreign languages, including the readiness to communicate in oral and written forms in Russian and foreign languages to solve problems of professional activity, possession of foreign language communicative competence in official business, educational professional, scientific, socio-cultural, everyday life spheres of foreign language communication (UK-4);
- able to follow ethical standards in professional activity (UK-5);
- able to plan and solve problems of one's own professional and personal development (UK-6)

*General professional competencies (GPC):*

- know the methodology of theoretical and experimental research in the field of professional activity (GPC-1);
- possess of the culture of scientific research, including the use of modern information and communication technologies (GPC-2);
- able to develop new research methods and their application in independent research activities in the field of professional activity (GPC-3);
- ready to organize the work of the research team in the field of professional activity (GPC-4);
- able to evaluate objectively the results of research and development carried out by other specialists and in other scientific institutions (GPC-5);
- the ability to present the results of research activities at a high level and taking into account the observance of copyright (GPC -6);
- get knowledge of methods of conducting patent research, licensing and copyright protection when creating innovative products in the field of professional activity (GPC-7);
- ready to teaching activities in basic educational programs of higher education (GPC -8)

*Professional competencies (PC):*

- know the methodology of theoretical and experimental research in the field of informatics and computer technology, possession of the culture of scientific research in the field of informatics and computer technology, including the use of the latest information and communication technologies (PC-1);
- able to develop new research methods and their application in independent research activities in the field of informatics and computer technology, taking into account the rules of observance of copy-right (PC-2);
- ready for independent (including leading) research activities, requiring broad fundamental training in modern areas of branch science, deep specialized training in the chosen direction, possession of the skills of modern research methods (PC-3);
- get fundamental knowledge in the main sections of computer science and computer technology, including the theoretical foundations of computer science, mathematical modeling, numerical methods and software packages, system analysis, information management and processing, elements and d-vices of computer technology and control systems, management in social and economic systems, use information retrieval systems, use experimental research techniques (PC-4).
- get fundamental knowledge in the main sections of informatics and computer technology, must have the ability to conduct scientific research and obtain new scientific and applied results (PC-5).

		Universal competences					
Name of disciplines (modules) in accordance with the curriculum		able to analyze critically and evaluate modern scientific achievements, generate new ideas when solving research and practical problems, including in interdisciplinary areas (UK-1)	able to design and carry out complex research, including interdisciplinary, based on a holistic system-ic scientific worldview using knowledge in the field of history and philosophy of science (UK-2)	ready to participate in the work of Russian and international research teams to solve scientific and scientific and educational problems (UK-3)	ready to use modern methods and technologies of scientific communication in the state and foreign languages, including the readiness to communicate in oral and written forms in Russian and foreign languages to solve problems of professional activity, possession of foreign language communicative competence in official business, educational professional, scientific, socio-cultural, everyday life spheres of foreign language communication (UK-4)	able to follow ethical standards in professional activity (UK-5)	able to plan and solve problems of one's own professional and personal development (UK-6)
<b>Block 1</b>	<b>Mandatory part Базовая часть</b>						
Б1.Б.01	Russian Language /Русский язык			+		+	+
Б1.Б.02	History and philosophy of Science История и философия науки	+	+			+	
	<b>Variable part/ Вариативная часть</b>						
Б1.В.01	Methodology of scientific research Методология научных исследований		+	+			
Б1.В.02	Research Seminar Научно-исследовательский семинар			+	+		
Б1.В.03	Methods of teaching informatics and computer technology in higher education Методика преподавания информатики и вычислительной техники в высшей школе					+	+
Б1.В.ДВ.02.01	Foreign language in the field of professional communication / Иностранный язык в сфере профессиональной коммуникации				+		
Б1.В.ДВ.02.02	Russian (as a foreign language) in the field of professional communication /Русский язык (как иностранный) в сфере профессиональной коммуникации				+		
<b>Block 2</b>	<b>Practices / Практики</b>						

Б2.В.01(П)	Practice on obtaining professional skills and experience of professional activity (research) / Практика по получению профессиональных умений и опыта	+					
<b>Block 3</b>	<b>Scientific research Научные исследования</b>						
	Variable part Вариативная часть						
Б3.В.01(Н)	Scientific research (research activity) Научные исследования (научно-исследовательская деятельность)	+	+	+	+	+	+
Б3.В.02(Н)	Scientific research (preparation of a scientific qualification work (dissertation) for the Candidate of Sciences) Научные исследования (подготовка научно-квалификационной работы (диссертации) на соискание кандидата наук)			+		+	+
<b>Block 4</b>	<b>Final state examinations ГИА</b>						
Б3.01	Preparation and passing State exam (Государственный экзамен)	+	+	+	+	+	+
Б3.02	Submission of a scientific report on the main results of the prepared scientific qualification thesis (SQT). Представление научного доклада об основных результатах подготовленной научно-квалификационной работы (диссертации)	+	+	+	+	+	+

		General professional competencies							
	Name of disciplines (modules) in accordance with the curriculum	-know the methodology of theoretical and experimental research in the field of professional activity (GPC-1);	-possess of the culture of scientific research, including the use of modern information and communication technologies (GPC-2);	-able to develop new research methods and their application in independent research activities in the field of professional activity (GPC-3)	-ready to organize the work of the research team in the field of professional activity (GPC-4);	-able to evaluate objectively the results of research and development carried out by other specialists and in other scientific institutions (GPC-5);	-the ability to present the results of research activities at a high level and taking into account the observance of copyright (GPC -6);	-get knowledge of methods of conducting patent research, licensing and copyright protection when creating innovative products in the field of professional activity (GPC-7);	-ready to teaching activities in basic educational programs of higher education (GPC -8)
<b>Block 1</b>	<b>Mandatory part Базовая часть</b>								
	Variable part Вариативная часть								
B1.B.01	Methodology of scientific research Методология научных исследований	+	+	+	+		+	+	
B1.B.02	Research Seminar / Научно-исследовательский семинар					+		+	
B1.B.03	Methods of teaching informatics and computer technology in higher education Методика преподавания информатики и вычислительной техники в высшей школе								+
B1.B.04	Management in social and economic systems Управление в социальных и экономических системах							+	
<b>Block 2</b>	<b>Practices Практики</b>								
B2.B.01(II)	Practice on obtaining professional skills and experience of professional activity (research)/ Практика по получению профессиональных умений и опыта профессиональной деятельности (научно-исследовательская)		+						



Б1.В.02(П)	Teaching practice /Педагогическая практика									+
	Disciplines of the choice of a postgraduate student Дисциплины по выбору аспиранта									
<b>Block 3</b>	<b>Scientific research Научные исследования</b>									
	Variable part Вариативная часть									
Б3.В.01(Н)	Scientific research (research activity) Научные исследования (научно-исследовательская деятельность)	+	+	+	+	+		+	+	
Б3.В.02(Н)	Scientific research (preparation of a scientific qualification work (dissertation) for the Candidate of Sciences) Научные исследования (подготовка научно-квалификационной работы (диссертации) на соискание кандидата наук)						+	+	+	
<b>Block 4</b>	<b>Final state examinations</b> Государственная итоговая аттестация									
Б4.Б.01(Г)	Preparation and passing State exam (Государственный экзамен)	+	+	+	+	+		+	+	+
Б4.Б.02(Д)	Submission of a scientific report on the main results of the prepared scientific qualification thesis (SQT). Представление научного доклада об основных результатах подготовленной научно-квалификационной работы (диссертации)	+	+	+	+	+		+	+	+



		<b>Professional competencies</b>				
	Name of disciplines (modules) in accordance with the curriculum	-know the methodology of theoretical and experimental research in the field of informatics and computer technology, possession of the culture of scientific research in the field of informatics and computer technology, including the use of the latest information and communication technologies (PC-1);	-able to develop new research methods and their application in independent research activities in the field of informatics and computer technology, taking into account the rules of observance of copy-right (PC-2);	-ready for independent (including leading) research activities, requiring broad fundamental training in modern areas of branch science, deep specialized training in the chosen direction, possession of the skills of modern research methods (PC-3);	-get fundamental knowledge in the main sections of computer science and computer technology, including the theoretical foundations of computer science, mathematical modeling, numerical methods and software packages, system analysis, information management and processing, elements and d-vides of computer technology and control systems, management in social and economic systems, use information retrieval systems, use experimental research techniques (PC-4).	-get fundamental knowledge in the main sections of informatics and computer technology, must have the ability to conduct scientific research and obtain new scientific and applied results (PC-5).
<b>Block 1</b>	<b>Mandatory part</b> Базовая часть					
	Variable part Вариативная часть					
Б1.В.01	Methodology of scientific research Методология научных исследований			+		
Б1.В.02	Research Seminar / Научно-исследовательский семинар			+	+	
Б1.В.03	Methods of teaching informatics and computer technology in higher education Методика преподавания информатики и вычислительной техники в высшей школе	+	+			
Б1.В.04	Management in social and economic systems/Управление в социальных и экономических системах			+		+
	<b>Disciplines of the choice of a postgraduate student</b> Дисциплины по выбору аспиранта					

Б1.В.ДВ.01.0	Actual problems of the theory of management of social economic systems Современные проблемы теории управления социальными экономическими системами			+		
Б1.В.ДВ.01.02	System analysis, management and information processing Системный анализ, управление и обработка информации			+		
Б1.В.ДВ.01.03	Modeling of social and economic systems Моделирование социальных и экономических			+		
Б1.В.ДВ.02.01	Foreign language in the field of professional communication / Иностранный язык в сфере профессиональной коммуникации	+				
Б1.В.ДВ.02.02	Russian (as a foreign language) in the field of professional communication /Русский язык (как иностранный) в сфере профессиональной коммуникации	+				
<b>Block 2</b>	<b>Practices Практики</b>					
	Variable part Вариативная часть					
Б2.В.01(П)	Practice on obtaining professional skills and experience of professional activity (research) / Практика по получению профессиональных умений и опыта профессиональной деятельности (научно-исследовательская)			+		+
Б1.В.02(П)	Teaching practice Педагогическая практика	+	+			
<b>Block 3</b>	<b>Scientific research Научные исследования</b>					
Б3.В.01(Н)	Scientific research (research activity) Научные исследования (научно-исследовательская деятельность)			+	+	+

Б3.В.02(Н)	Scientific research (preparation of a scientific qualification work (dissertation) for the Candidate of Sciences) Научные исследования (подготовка научно-квалификационной работы (диссертации) на соискание кандидата наук)			+	+	+
<b>Block 4</b>	<b>Final state examinations</b> <b>Государственная итоговая аттестация</b>					
Б4.Б.01(Г)	Preparation and passing State exam (Государственный экзамен)	+	+	+	+	+
Б4.Б.02(Д)	Submission of a scientific report on the main results of the prepared scientific qualification thesis (SQT). Представление научного доклада об основных результатах подготовленной научно-квалификационной работы (диссертации).	+	+	+	+	+