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Seifullin University

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EDUCATIONAL PROGRAM
“Modeling and optimization of business processes”
(program name)

Code and classification education	8D06 Information and communication technology
Code and classification of training areas	8D061 Information and communication technologies
Code in the International standard classification of education	0613
Degree awarded	Doctor of Philosophy / Doctor of Philosophy in 8D061 - "Modeling and optimization of business processes"
Duration of training	3 years

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1 Passport of the educational program

Code and classification education	8D06 Information and communication technology
Code and classification of training areas	8D061 Information and communication technologies
Code in the International standard classification of education	0613
Name of educational program	Modeling and optimization of business processes
Type of educational program	New
Purpose of educational program	Preparation of international PhD doctors for scientific and pedagogical work in the field of development of theoretical and methodological provisions of the analysis of the use of information and communication technologies, as well as professional activities related to the application and improvement of methods of modeling and optimization of business processes
Level on NQF	8
Level on ORK	
Learning outcome	<p>1. carry out methodological justification of scientific research, apply modern methods of scientific research to form judgments and conclusions on the problems of information technologies and systems when performing independent scientific research, analyze and choose methods for constructing classification rules.</p> <p>2. classify the main concepts in the field of business process theory, determine the types of business processes and their features, diagnose economic simulations using modern tools, compare methods for drawing up a feasibility study of investment projects, possess the methodology and methodology of research, possess the skills of independent scientific and research work.</p> <p>3. to analyze the theoretical foundations of the organization of production, business and agricultural business, the laws of the Republic of Kazakhstan in the field of regulation of agricultural activities, organizational and economic basis of</p>

	<p>agricultural enterprises and their associations, scientific basis of organization, regulation and protection of labor in agriculture, the organization and methodology of economic analysis of the activities of branches of agriculture.</p> <p>4. model, analyze the organizational structure and develop proposals for its improvement, build their description in the form of formal models, form proposals for improving business processes, justify the need to use analytical and computer tools to solve business process management problems.</p> <p>5. develop software projects for industrial and embedded systems in compliance with domestic and foreign standards, implement effective implementation of software projects, perform risk assessment and consciously choose the best approaches and technologies for software development, testing and maintenance, develop and test software applications, including those that include calling web services, effectively use and maintain the developed automated system to improve business processes and management.</p> <p>6. identify areas of application of various statistical methods and evaluate their effectiveness, build mathematical models for different classes of optimization problems, analyze the features of optimization problems and choose the most appropriate algorithms for their solution, develop software to find optimal options, use mathematical methods and modern tools for solving applied problems of information system optimization.</p> <p>7. the ability to critically evaluate and adapt to modern conditions the scientific results obtained by domestic and foreign researchers in the field of modeling and optimization of business processes in IT, the ability to use international information resources and standards in the Informatization of enterprises and organizations.</p>
<p>Legal and regulatory framework</p>	<ul style="list-style-type: none"> • Constitution of the Republic of Kazakhstan. • Law of the Republic of Kazakhstan dated July 27, 2007 № 319-III "On education" (with amendments and additions as of 01.01.2009). • Order of the Minister of education and science of the Republic of Kazakhstan dated October 31, 2018 №604 "On approval of state educational standards at all levels of education". • National qualifications framework of 16.03.2016 • Industry qualifications framework in the field of information and communication technologies, No. 1 of 20.12.2016.

	<ul style="list-style-type: none"> Professional standards: «The creation and management of information technology»
Department	Information and communication technologies

2 General characteristics of the educational program (relevance, features, competitive advantages, uniqueness, stakeholders, etc.)

The doctoral program in the field of Information and communication technologies offers a combination of fundamental disciplines, research seminars and practically oriented courses in the specialty "Modeling and optimization of business processes".

One of the advantages of the doctoral program in the field of Information and communication technologies is its interdisciplinary nature. The set of competencies allows you to apply for leading positions in large IT companies for managing development and integration of complex software systems, as well as successfully launch your own business projects in the field of IT.

Doctoral students of the specialization "Modeling and optimization of business processes" are able to track leading infocommunication technologies, the introduction of which can improve business efficiency; determine the policy of enterprises and organizations in the field of information systems and infocommunication technologies, ensure the development of joint plans for strategic and ICT development of the enterprise, create information models of business processes, determine the composition and functions of information systems, choose information technologies that implement the functions of IP, make informed decisions about the integration of individual information systems.

Specialization disciplines provide doctoral students with knowledge in the field of business architecture solutions, modern technologies for solving the complex task of automating business processes in the enterprise by integrating the latest scientific achievements (their own and partners') in the field of information analysis and IT technologies to business management in order to achieve maximum competitiveness of specialists.

3 Competence model (portrait) of the graduate

3.1 Areas of professional activity

The economy of Kazakhstan leads to mobility of career prospects for holders of doctoral degrees. The fundamental knowledge and skills acquired during doctoral studies significantly improve the prospects for employment and career development within and outside the academic sphere. Obtaining a doctor's degree contributes to the successful career advancement of a specialist in research, innovation and entrepreneurship, IT-activities, design and economic, analytical, organizational and managerial, and pedagogical activities.

3.2 Types of professional activity

Types of professional activity scientific-pedagogical, research, innovative-entrepreneurial, IT-activities, economic, which is expert-analytical, organizational-managerial, administrative in the field of public administration and business activities in the field of agriculture.

3.3 General education competencies

The doctoral student must have General education competencies that reflect the results of training and characterize the abilities:

- possess modern approaches to enterprise management and analytical methods of information and communication technologies, methods: diagnostics, analysis and problem solving, decision-making and their implementation in organizations;

- be able to solve practical business problems and make decisions on their implementation in practice, be prepared for the implementation of management functions and solve professional problems in the interests of the enterprise;

- have the necessary amount of knowledge, skills and abilities to occupy the appropriate managerial position, which are based on a deep understanding of the features of modeling and optimization of business processes and its capabilities, awareness of the social responsibility of the business, etc.;

- be able to assess the current problems and prospects of social and economic development of Kazakhstan, understand the current trends in the world economy and globalization, and navigate issues of international competition.

3.4 Basic competencies

In the course of training, the doctoral student acquires basic competencies:

- demonstrate a systematic understanding of the field of study, mastering the skills and research methods used in this area;

- demonstrate the ability to think, design, implement, and adapt an essential research process with a scientific approach;

- contribute your own original research in expanding the boundaries of the scientific field that deserves publication at the national or international level;

- critically analyze, evaluate, and synthesize new and complex ideas;

- share your knowledge and achievements with colleagues, the scientific community, and the General public;

to promote in academic and professional context, technological, social or cultural development of a society based on knowledge.

3.5 Professional competencies

The educational program allows doctoral graduates to acquire competencies in the field of scientific activity in the conditions of constant updating of knowledge and modernization of society, qualified and creative analysis of modern problems of management Economics, in the organization of their own and joint research projects, setting urgent tasks and expanding the boundaries of scientific research on economic problems, in understanding the principles of building and improving educational programs in the field of information and communication technologies, in technical and social fields, legal and communication aspects of business and management.

4 Base of professional practices (all types of practices)

Scientific and applied research of doctoral students is carried out in the framework of foreign internships in leading universities in Russia and Europe.

Research practices based on large agricultural enterprises also contribute to the effective implementation of research activities. The main partner universities in implementing joint research projects, improving academic mobility, and organizing research internships are: Plovdiv agricultural University (Bulgaria), Omsk state agrarian University named after P. A. Stolypin (Russia), and Varna free University named after V. A. Stolypin. Brave (Bulgaria).

5 Structure of the educational program of doctoral studies in the scientific and pedagogical direction

№	Name of cycles of disciplines and activities	Total labor intensity	
		in academic hours	in academic credits
1	2	3	4
1.	Cycle of General education subjects	1650	55
1.1	Cycle of basic disciplines (DB)	900	30
1)	High school component	600	20
	Research methods	150	5
	Academic writing	150	5
	Pedagogical practice	300	10
2)	Component of choice	300	10
	Modern theory of business processes in IT	150	5
	Methods for building a business model	150	5
1.2	Cycle of profile disciplines (PD)	750	25
1)	High school component	450	15
	Analysis and improvement of business processes and IT structures	150	5
	Research practice	300	10
2)	Component of choice	300	10
	Business process optimization methods	150	5
	Research of business process analysis and synthesis methods	150	5
2	Research work	3690	123
1)	Research work of a doctoral student, including passing an internship and completing a doctoral dissertation	3690	123
3	Additional types of training		
4	Final certification	360	12
1)	Writing and defending a doctoral thesis	360	12
	Subtotal	5700	190

Structure of the educational program of doctoral studies in the profile direction

№	Name of cycles of disciplines and activities	Total labor intensity	
		in academic hours	in academic credits
1	2	3	4
1.	Cycle of General education subjects	1650	55
1.1	Cycle of basic disciplines (DB)	900	30
1)	High school component	600	20
	Research methods	150	5
	Academic writing	150	5
	Pedagogical practice	300	10
2)	Component of choice	300	10
	Modern theory of business processes in IT	150	5
	Methods for building a business model	150	5
1.2	Cycle of profile disciplines (PD)	750	25
1)	High school component	450	15
	Analysis and improvement of business processes and IT structures	150	5
	Research practice	300	10
2)	Component of choice	300	10
	Business process optimization methods	150	5
	Research of business process analysis and synthesis methods	150	5
2	Research work	3690	123
1)	Research work of a doctoral student, including passing an internship and completing a doctoral dissertation	3690	123
3	Additional types of training		
4	Final certification	360	12
1)	Writing and defending a doctoral thesis	360	12
	Subtotal	5700	190

Appendix 3. Description of the disciplines of compulsory and university components

1. Basic information about the discipline:	
Name of the discipline	Research methods
2. Number of credits	5
3. Prerequisites:	History and philosophy of science
4. Post requisites:	Conducting research and completing a doctoral dissertation
5. The content of the discipline: The role of science in the development of society. Goals, subject, method, and tasks. Structure of scientific knowledge, functions. The concept of truth in scientific research. Development of scientific research in Kazakhstan and abroad. Methods of scientific research. Scientific methods of cognition in research. Fundamentals of the method of searching for information For scientific research planning of scientific research. Registration and provision of research results.	

1. Basic information about the discipline:	
Name of the discipline	Academic writing
2. Number of credits	5
3. Prerequisites:	Foreign language
4. Post requisites:	conducting research and completing a doctoral dissertation
5. The content of the discipline: Общие требования к научной работе. Виды академических текстов. Стиль изложения. Ошибки в письменных научных работах. Ссылки и правила цитирования. Плагиат. Составление библиографии. Понятие ключевых слов. Организация работы над научной статьей: определение научной проблемы, способы решения и всевозможных научных данных, доказывающих правильность выбранного способа. Алгоритм написания и опубликования научной статьи (формулировка замысла и составление плана статьи; развитие научной гипотезы; осуществление обратной связи между разделами статьи; обращение к ранее опубликованным материалам по данной теме; четкая логическая структура компоновки отдельных разделов статьи; отбор и подготовка материалов; группирование материалов; проработка рукописи; проверка правильности оформления, литературная правка). Написание аннотации.	

1. Basic information about the discipline:	
Name of the discipline	Analysis and improvement of business processes of IT structures
2. Number of credits	5
3. Prerequisites:	Methods for building a business model
4. Post requisites:	Conducting research and completing a doctoral dissertation
5. The content of the discipline: Analysis of business processes as part of the management of the organization. Description of business processes. Project management and ways to optimize portfolio management in Microsoft Project. Planning and controlling the organization's project activities in Microsoft Project. Built-in templates, tools for different levels of Analytics and statistics, working time management tools, etc.for project work in enterprises in the MS Project program.	

Appendix 4. Description of disciplines of the optional component

1. Basic information about the discipline:	
Name of the discipline	Modern theory of business processes in IT
2. Number of credits	5
3. Prerequisites:	Fundamentals and law of Economics, econometric research
4. Post requisites:	Conducting research and completing a doctoral dissertation
5. The content of the discipline: Modeling of working processes and policies. Language for describing business processes. Solutions for automation of modeling and process management. BPM software for managing and executing complex operational processes and workflows to improve overall performance, optimize processes, and scale process mapping solutions	

1. Basic information about the discipline:	
Name of the discipline	Methods for building a business model
2. Number of credits	5
3. Prerequisites:	Fundamentals and law of Economics, econometric research
4. Post requisites:	Conducting research and completing a doctoral dissertation
5. The content of the discipline: The company's strategy and business model. Strategy and business model. A typology of Archetypes of business models MIT. Elements of a successful business model. Business models of well-known companies. The business model of Microsoft, etc. the Business planning as a strategy implementation tool.	

1. Basic information about the discipline:	
Name of the discipline	Research of business process analysis and synthesis methods
2. Number of credits	5
3. Prerequisites:	Econometric research
4. Post requisites:	Conducting research and completing a doctoral dissertation
5. The content of the discipline: The concept of a business model. Different approaches and types of models. Concepts for analyzing, building, and improving the business model. A method for visual representation of the main factors affecting consumer segments, value propositions, sales channels, customer relationships, revenue streams, resources, and activities. Analysis of existing business models in order to find weaknesses or new growth points for businesses and companies.	

1. Basic information about the discipline:	
Name of the discipline	Business process optimization methods
2. Number of credits	5
3. Prerequisites:	Business process analysis
4. Post requisites:	Conducting research and completing a doctoral dissertation
5. The content of the discipline: Process management system. Identification and allocation of business processes. Technology for describing business processes. Ranking business processes and developing a process improvement strategy. Methods for analyzing and optimizing business processes. Role and significance of regulatory documents. Business process cost estimation. Organizing a project to optimize business processes.	