



CATALOG OF ELECTIVE DISCIPLINES
For students in the direction of preparation 7M061 Information and communication technologies

Brief description of the elective disciplines of the educational program

EPG	EP	Form of education	The name of discipline	Code of subject	Discipline cycle	Component	Number of credits	Level of training	Cafedra	Courses Academic period	Pre-requisites	Post-requisites	Brief content of the discipline	Key learning outcomes	Name of the alternative discipline
M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	Econometric studies	EI 5205	BS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Management and marketing	1	System Analysis and Decision Making, Data Management, IT Project Management	Business Performance Management Systems, Decision Support Systems, Optimization Methods in Economics	The discipline "Econometric Studies" is aimed at developing undergraduate knowledge of the methods of theoretical analysis and modeling, theoretical and experimental research.	Apply mathematical knowledge to solve scientific and technical problems and applied problems associated with the development and use of information technology, the main classes of mathematical models for the analysis of phenomena, processes; use methods of system analysis and modeling in research activities Understand the essence of economic processes and the main indicators of their interrelation, conduct a search and analysis of innovations in economics, management and ICT, apply research tasks, select methods of experimental work, prepare the basis for scientific research.	Software and hardware information security
M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	Software and hardware information security	PASIB 5205	BS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	Programming technology, Information security	Information technologies of mathematical modeling, Research practice, Simulation modeling systems	The study of the basic principles of information security. The study of methods, technologies and means of information protection in an automated system. Model tests and access control. Security threats and typical attacks on the operating system. Cryptographic methods of information security. The study of international and domestic standards in the field of information security.	Analyze promising research methods and solving professional problems based on the knowledge trends in the development of computers and information technology, to choose methods and develop algorithms for solving management problems and design automation objects, apply modern technologies for development of software, to monitor the quality of the developed software.	Econometric studies
M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	Requirements management	UT 5206	BS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	System Analysis and Decision Making, Data Management, IT Project Management	Business Performance Management Systems, Decision Support Systems	The discipline "Requirements Management" is aimed at familiarizing undergraduates with the process of preparing, analyzing, documenting and managing requirements in large-scale projects on developing and maintaining software for research and business processes, with preparing and implementing change requests.	To participate in the management of information systems creation projects at life cycle stages, to implement and justify the selection of design solutions for the types of information systems support, to interpret and present the results of scientific research, to draw up practical recommendations based on them, to put forward fundamentally new hypotheses, to predict trends.	Risk management
M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	Risk management	UR 5206	BS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Management and marketing	1	System Analysis and Decision Making, Data Management, IT Project Management	Business Performance Management Systems, Decision Support Systems	Place and role of risks in economic activity. Risk management system. Risks of enterprise service. Quantitative risk assessments under uncertainty. Making the best decision in terms of economic risk. Investment project management at risk. Risk management of hotels and restaurants. The main methods and ways to reduce economic risks. Methods and technologies for the identification of stochastic risks.	To participate in the management of information systems creation projects at life cycle stages, to implement and justify the selection of design solutions for the types of information systems support, to interpret and present the results of scientific research, to draw up practical recommendations based on them, to put forward fundamentally new hypotheses, to predict trends.	Requirements management

M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	Methodology and tools for business process modeling	MIDM/BP 5305	AS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	1	System Analysis and Decision Making, Data Management, IT Project Management	Business Process Modeling and Management, Information technologies of mathematical modeling, Simulation modeling systems	Discipline is aimed at the formation of knowledge of technology, methods and tools to improve business processes, research and analysis of business systems, the formation of proposals for improving business processes, forecasting and modeling of business process management, systems for modeling and analyzing organization processes.	Apply mathematical knowledge to solve scientific and technical problems and applied problems associated with the development and use of information technology, the main classes of mathematical models for the analysis of phenomena, processes; use methods of system analysis and modeling in research activities. Understand the essence of economic processes and the main indicators of their interrelation, conduct a search and analysis of innovations in economics, management and ICT, apply research tasks, select methods of experimental work, prepare the basis for scientific research.	International Business Planning Practice
M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	International Business Planning Practice	MPBP 5305	AS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	1	System Analysis and Decision Making, Data Management, IT Project Management	Business Process Modeling and Management, Information technologies of mathematical modeling, Simulation modeling systems	International standards for business planning. Features of the formation of the financial model of a business plan. Assessment of uncertainty in the business plan. Attracting investment, interaction with investors. Project cash flow forecasting. Business planning as a tool for strategic management of the company. Features of business planning for innovative projects. Business strategy for startups. Business planning application packages.	Apply mathematical knowledge to solve scientific and technical problems and applied problems associated with the development and use of information technology, the main classes of mathematical models for the analysis of phenomena, processes; use methods of system analysis and modeling in research activities. Understand the essence of economic processes and the main indicators of their interrelation, conduct a search and analysis of innovations in economics, management and ICT, apply research tasks, select methods of experimental work, prepare the basis for scientific research.	Methodology and tools for business process modeling
M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	Business Process Optimization Tools	SOBP 5304	AS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	2	Econometric studies, Theory of systems and systems analysis	Business Process Modeling and Management, Research practice	Business process and the need to optimize it. Business process as an object of management. The essence of the reengineering of business processes. Basic principles of business process reengineering. Stages of business process reengineering. Technology reengineering business processes. Modeling of business processes in reengineering. Regulation of business processes of the organization. Organization of business process reengineering.	Apply mathematical knowledge to solve scientific and technical problems and applied problems associated with the development and use of information technology, the main classes of mathematical models for the analysis of phenomena, processes; use methods of system analysis and modeling in research activities. Understand the essence of economic processes and the main indicators of their interrelation, conduct a search and analysis of innovations in economics, management and ICT, apply research tasks, select methods of experimental work, prepare the basis for scientific research.	Decision Support Systems
M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	Decision Support Systems	SPPR 5304	AS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	2	Econometric studies, Theory of systems and systems analysis	Business Process Modeling and Management, Research practice	The concept of a decision support system. Stages of decision making. Multi-criteria decisions with objective models. Man-machine procedures. Assessment of the complexity of the operations carried out by the decision maker. Decision making under certainty and uncertainty. Generalized analysis of interactive multi-criteria optimization methods. Multi-criteria utility theory. Expert systems.	Apply mathematical knowledge to solve scientific and technical problems and applied problems associated with the development and use of information technology, the main classes of mathematical models for the analysis of phenomena, processes; use methods of system analysis and modeling in research activities. Understand the essence of economic processes and the main indicators of their interrelation, conduct a search and analysis of innovations in economics, management and ICT, apply research tasks, select methods of experimental work, prepare the basis for scientific research.	Business Process Optimization Tools
M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	Business Performance Management Systems	SUEB 5207	BS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Economy	1	2	Econometric studies, Requirements management, Theory of systems and systems analysis	Business Process Modeling and Management, Research practice, Undergraduate research work, including the implementation of the master's thesis.	The discipline "Business Performance Management Systems" is aimed at developing undergraduate a complex of theoretical knowledge and methodological foundations in the field of business performance management systems, as well as practical skills necessary for the implementation and practical use of such systems.	Apply mathematical knowledge to solve scientific and technical problems and applied problems associated with the development and use of information technology, the main classes of mathematical models for the analysis of phenomena, processes; use methods of system analysis and modeling in research activities. Understand the essence of economic processes and the main indicators of their interrelation, conduct a search and analysis of innovations in economics, management and ICT, apply research tasks, select methods of experimental work, prepare the basis for scientific research.	Optimization Methods in Economics

M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	Optimization Methods in Economics	MGE 5207	BS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	2	Econometric studies, Requirements management, Theory of systems and systems analysis	Business Process Modeling and Management, Research practice, Undergraduate research work, including the implementation of the master's thesis.	Linear Programming Problem. Simplex method. Duality in linear programming. Sensitivity analysis of the optimal solution in problems of economics, management, finance and commercial activities. Transport task. Method of potentials. The transport problem with the imbalance of production and consumption in the economy. Application of the open model of the transport problem to the solution of the problem of location and development of production. Matrix games.	Apply mathematical knowledge to solve scientific and technical problems and applied problems associated with the development and use of information technology, the main classes of mathematical models for the analysis of phenomena, processes; use methods of system analysis and modeling in research activities. Understand the essence of economic processes and the main indicators of their interrelation, conduct a search and analysis of innovations in economics, management and ICT, apply research tasks, select methods of experimental work, prepare the basis for scientific research.	Business Performance Management Systems
M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	Information technologies of mathematical modeling	ITMM 5306	AS	Elective subjects	6.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	3	Methodology and tools for business process modeling, Software and hardware information security	Artificial intelligence methods, Business Process Modeling and Management, Research practice, Undergraduate research work, including the implementation of the master's thesis.	The methods of mathematical and instrumental methods of economics, modeling and forecasting of economic and production processes, ideas about the general methodological principles for constructing mathematical models using information technologies.	Professionally solve the problems of industrial and technological activities, taking into account modern achievements of science and technology, including the development of algorithmic and software solutions in the field of system and applied programming, the development of mathematical, informational and simulation models on the subject of research. Able to use for solving analytical and research problems modern technical means and information technologies; to put into practice modern methodologies of life cycle and quality management of systems, software and information technology services.	Simulation modeling systems
M094 - «Information technology»	7M06103 - «Information Business Analytics»	Full-time (MS 2 years) trimester	Simulation modeling systems	SIM 5306	AS	Elective subjects	6.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	3	Methodology and tools for business process modeling, Software and hardware information security	Artificial intelligence methods, Business Process Modeling and Management, Research practice, Undergraduate research work, including the implementation of the master's thesis.	The study of the discipline is aimed at obtaining knowledge using the methods of applied informatics, mathematical and instrumental methods of economics, modeling and forecasting economic and production processes, ideas about the general methodological principles for constructing mathematical models using information technologies.	Analyze promising research methods and solving professional problems based on the knowledge trends in the development of computers and information technology, to choose methods and develop algorithms for solving management problems and design automation objects, apply modern technologies for development of software, to monitor the quality of the developed software. Perform an analysis of the studied system or process, choose the modeling method to build an adequate model of the system or process using modern computer tools to interpret and analyze the simulation results demonstrate the skills of designing embedded systems.	Information technologies of mathematical modeling

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