S.Seifullin Kazakh Agrotechnical University

S.Seifullin Kazakh Agrotechnical University
Shakhmetova D. S.
2023

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	Course	Academic period	Pre-requisitions	Post-requisitions	Brief content of the discipline	Key learning outcomes	Name of the alternative discipline
M094 - «Information technology»	7M06102 - «Computational Systems and Technology»	Full-time (MS 2 years) trimester	Software and hardware information security	PASIB 5203	BS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	1		Cloud computing, Computer simulation and design systems, Research practice	The study of the basic principles of information security. The study of methods, technologies and means of information protection in an automated system. Model research 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.	
M094 - «Information technology»	7M06102 - «Computational Systems and Technology»	Full-time (MS 2 years) trimester	Methods of scientific researches	MNI 5202	BS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	2		Mathematical modeling of deterministic and stochastic processes, Simulation modeling systems, Systemology	The study of historical information on the application of research methods. Scientific research of the essence and features. The essence and features of scientific research. The main stages of scientific research. Methods of research. Classification signs of objects and objects of study. The process of creativity. Structural scheme of research. The main aspects of scientific research. The process of solving a scientific problem. Features of the publication of research results.	Define specific research professional tasks, describe and find solutions, to issue the results of scientific production with the use of modern computer technology and application packages, to analyze the behavior of the object from the position of full certainty in the present and the future, to develop a mathematical model. To apply methods of the theory of knowledge and research, represent the stages of the system approach, choose a sequence of works during the system analysis, use of CAD software testing	
M094 - «Information technology»	7M06102 - «Computational Systems and Technology»	Full-time (MS 2 years) trimester	Big Data Clustering	KBD 5304	AS	Elective subjects	6.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	1	3	Designing embedded information management systems. Technology of software development for the real-time systems	Cloud computing, Computer vision, Master student's research work, including implementation of master's thesis, Research practice	The study of data mining tasks. The study of basic methods of data mining. Data mining tools. Practical application of intelligent technology.	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.	
M094 - «Information technology»	7M06102 - «Computational Systems and Technology»	Full-time (MS 2 years) trimester	Mathematical modeling of deterministic and stochastic processes	MMDSP 6301	AS	Elective subjects	6.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	2	1	Designing embedded information management systems, Methods of scientific researches, Technology of software development for the real-time systems	Computer simulation and design systems, Master student's research work, including implementation of master's thesis, Research practice	Research and classification of object models and control systems. The study of typical schemes of mathematical modeling, continuously deterministic schemes of mathematical modeling. Optimization models. Discrete deterministic schemes. Discrete stochastic schemes. Regression models. Continuous stochastic models.	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.	Simulation modeling systems

M094 - «Information technology»	7M06102 - «Computational Systems and Technology»	Full-time (MS 2 years) trimester	Simulation modeling systems		AS	Elective subjects	6.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	2	1	Designing embedded information management systems, Methods of scientific researches, Technology of software development for the real-time systems	Computer simulation and design systems, Master"s research work, including internship and master"s thesis, Research practice	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.	Mathematical modeling of deterministic and stochastic processes
M094 - «Information technology»	7M06102 - «Computational Systems and Technology»	Full-time (MS 2 years) trimester	Operating environment CAD	OSS 6302	AS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	2	1	Designing embedded information management systems, Technology of software development for the real-time systems	Computer simulation and design systems, Research practice	General preparation and configuration of instrumental environments CAD systems. Mathematical software for developing 3D models in CAD systems. 3D and 2D modeling tools in CAD systems.	To apply methods of the theory of knowledge and research, represent the stages of the system approach, choose a sequence of works during the system analysis, use of CAD software testing	
M094 - «Information technology»	7M06102 - «Computational Systems and Technology»	Full-time (MS 2 years) trimester	Systemology	Sis 6308	AS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	2	1	Methods of scientific researches	Computer simulation and design systems, Master"s research work, including internship and master"s thesis	The study of the methods of the theory of knowledge and research. The main provisions of the general theory of systems. Features of the conceptual apparatus. Methods of describing information systems. Stages of the system approach in the development of the object. The main stages and sequence of work when conducting a system analysis. Functional system description.	Define specific research professional tasks, describe and find solutions, to issue the results of scientific production with the use of modern computer technology and application packages, to analyze the behavior of the object from the position of full certainty in the present and the future, to develop a mathematical model. To apply methods of the theory of knowledge and research, represent the stages of the system approach, choose a sequence of works during the system analysis, use of CAD software testing	
M094 - «Information technology»	7M06102 - «Computational Systems and Technology»	Full-time (MS 2 years) trimester	Cloud computing	OV 6303	AS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	2	2	Big Data Clustering, Designing embedded information management systems, Technology of software development for the real-time systems	Master"s research work, including internship and master"s thesis, Research practice	Study of cloud services on the Internet. Explore the capabilities of the Microsoft Azure platform. Creation of cloud services in Microsoft Azure. Mobile applications in the cloud. Work with ESB. Cloud storage services. Cloud services for collaboration.	Determine the stages of cloud computing technology, to illustrate the use of cloud technologies in software development, to evaluate the use of cloud technologies in system design.	
M094 - «Information technology»	7M06102 - «Computational Systems and Technology»	Full-time (MS 2 years) trimester	Computer vision	KZ 6305	AS	Elective subjects	6.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	2	2	Big Data Clustering, Designing embedded information management systems, Technology of software development for the real-time systems	Master"s research work, including internship and master"s thesis, Research practice	The study of the methods of formation, image processing. Research of means of detection and comparison of characteristics. Segmentation. Alignment of the signs. Photometric calibration. Motion patterns. Multi-layer images.	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.	
M094 - «Information technology»	7M06102 - «Computational Systems and Technology»	Full-time (MS 2 years) trimester	Computer simulation and design systems	SKMP 6204	BS	Elective subjects	5.0	Master's program by specialization (Scientific & pedagogical direction)	Computer science	2	2	Mathematical modeling of deterministic and stochastic processes, Operating environment CAD, Software and hardware information security, Systemology	Master"s research work, including internship and master"s thesis, Research practice	The study of the basic concepts of the theory of modeling. Structural analysis study: methodology, approaches and software. Network modeling methods: network planning and management, Petri nets. Simulation: tools. Queuing systems. Stages of building models. Math modeling.	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.	

Head of the Department of Computer Science A.Anagulova