Faculty of Digital Transformation
Department of Information Systems

APPROVE

Vice-Rector for Academic and Educational Activities of International University of Information Technologies" JSC
_____ Mustafina A.K.
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BUSINESS ANALYSIS

CATALOG OF ELECTIVE DISCIPLINES

2023 admission

2023

Catalog of elective disciplines for the specialty/EP "Business Analysis" developed on the basis of the working curriculum of the specialty / EP.

The catalog of elective disciplines was discussed at a meeting of the Department of Information Systems
protocol No. 3 dated "07" 02 2023

Head of the Department _____ Kozhamzharova D.Kh.
signature

Developers _____ Sembina G.K. , associate professor, c.t.sc.
signature

_____ Kabdushev Sh.B., senior lecturer, master
signature

The catalog of elective disciplines was approved at a meeting of the Educational and Methodological Council of JSC "International University of Information Technologies".
Protocol No. 3 dated "14" 03 2023.

1 TERMS AND ABBREVIATIONS

1. 1 The educational program is a single complex of the main characteristics of education, including the goals, results and content of education, the organization of the educational process, the ways and methods of their implementation, the criteria for assessing learning outcomes.

The content of the educational program of postgraduate education consists of disciplines of two cycles - basic disciplines (hereinafter - BD) and major disciplines (hereinafter - MD).

BD and MD cycles include disciplines of the university component (hereinafter – UC) and (or) elective component (hereinafter - EC).

1. 2 Catalog of Elective Disciplines (CED) is a systematized annotated list of all disciplines of the elective component, for the entire period of study, containing their brief description indicating the purpose of the study, brief content (main sections) and expected learning outcomes. The CED reflects the prerequisites and postrequisites of each academic discipline. CED should provide students with the possibility of an alternative choice of elective academic disciplines for the formation of an individual educational trajectory.

Based on the educational program and CED, students develop individual curricula with the help of advisors.

1. 3 Individual Curriculum (IC) is a curriculum formed for each academic year by students independently with the help of an advisor based on the educational program and the catalog of elective disciplines and (or) modules;

The IC determines the individual educational trajectory of each student separately. The IC includes disciplines and types of educational activities (practices, research / experimental research work, forms of final certification), the university component (UC) and the elective component (EC).

1. 4 An advisor is a teacher who performs the functions of an academic mentor who is studying according to the relevant educational program, assisting in choosing a learning path (forming an individual curriculum) and mastering the educational program during the period of study.

1. 5 The university component is a list of compulsory academic disciplines determined by the university independently for the development of the educational program.

1. 6 An elective component is a list of academic disciplines and the corresponding minimum amount of academic credits offered by the university, independently chosen by students in any academic period, taking into account their prerequisites and postrequisites.

1. 7 The elective disciplines are academic disciplines included in the university component and the elective component within the established academic credits and introduced by educational organizations, reflecting the individual training of the student, considering the specifics of socio-economic development and the needs of a particular region, established scientific schools.

1. 8 The Postrequisites are disciplines and (or) modules and other types of educational work, the study of which requires knowledge, skills, abilities, and competencies acquired upon completion of the study of this discipline and (or) modules;

1. 9 The Prerequisites are disciplines and (or) modules and other types of educational work containing the knowledge, skills, abilities, and competencies necessary for mastering the studied discipline and (or) modules;

1. 10 The Competencies are the ability to use the knowledge, skills and abilities acquired in the process of learning in professional activities.

2 ELECTIVE DISCIPLINES

No.	The cycle of discipline	Discipline code	Name of the discipline	Semester	Number of credits	Prerequisites
1 well						
1	Elective Component	SFT7118	Mathematical foundations of decision making	1	5	Mathematical analysis, Probability theory and mathematical statistics
		SFT7109	Mathematical programming	1	5	Mathematical analysis, Probability theory and mathematical statistics
2	Elective Component	SFT7121	Creative thinking modeling	1	5	Probability theory and mathematical statistics
		MAT7100	Application of mathematics and statistics in IT	1	5	Probability theory and mathematical statistics
3	Elective Component	SFT7125	Project communication management	1	5	Psychology
		PM7102	Intelligent methods of managing IS and projects	1	5	Psychology, Introduction to Machine Learning
4	Elective Component	SFT7122	Decision support systems	2	4	Creative thinking modeling, Project communication management
		SFT7128	IS Modeling and Design	2	4	Creative thinking modeling, Project communication management
2 course						
1	Elective Component	SFT711 3	Analysis and processing of unstructured data	3	4	Introduction to Machine Learning
		SFT7124	Cloud computing for big data analytics	3	4	Introduction to Machine Learning
2	Elective Component	PM7103	Project quality and risk management	2	4	Creative thinking modeling, Project communication management
		MGT7100	IT project management	2	4	Creative thinking modeling, Project communication management
3	Elective Component	PM7106	IT and strategic management methods in the project	3	4	Psychology, Project communication management
		SFT7111	Econometric Information Technology	3	4	Theory of Probability and Mathematical Statistics
4	Elective Component	SFT71 35	Tools and platforms for building predictive models	3	4	Data Mining, Machine Learning Methods
		SFT7136	Technologies and tools for data analysis	3	4	Theory of Probability and Mathematical Statistics

3 DESCRIPTION OF ELECTIVE DISCIPLINES

Description of the discipline	
Discipline code	SFT7118
Name of the discipline	Mathematical foundations of decision making
Number of credits (ECTS)	5
Course, semester	1 , 1
Department name	IS
Course author (s)	Doctor of Technical Sciences, prof. Sinchev B.K.,
Prerequisites	Mathematical analysis, Probability theory and mathematical statistics
Postrequisites	Master's thesis defense
The purpose of studying the discipline	The goal is to ensure the adequacy of modern economic and mathematical models and their algorithms for making ICT decisions in business processes, resource management of IT projects and building enterprise infrastructures.
Brief description of the course (main sections)	"Mathematical Foundations of Decision Making" includes linear, non-linear and dynamic economic and mathematical models in business analysis and IT project management and their solution algorithms. Linear models contain simplex methods, methods for solving transport and logistics problems and industrial production; nonlinear models - methods of nonlinear optimization, such as the method of Lagrange multipliers, the method of penalty functions and others; dynamic models – Pontryagin's maximum principle, Bellman's method and others; methods for combinatorial optimization of scheduling, routing, packaging, service provision problems, and others.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	- Process experimental and statistical data, develop skills to establish the adequacy of economic and mathematical models for business processes and resource management of IT projects, use formalization methods and decision-making methods, justify decisions in business analysis and risk management. - The ability to carry out the formulation and conduct of experiments according to a given methodology; to analyze the results of numerical experiments using infocommunication technologies, to select the optimal solutions, to prepare and compile reviews, reports and scientific publications. - The ability to apply methods for building, analyzing and applying models to assess the state and forecast the development of business processes and their IT projects, analyze the enterprise architecture, choose rational IS and ICT solutions for managing business processes and IT project development cycles.

Description of the discipline	
Discipline code	SFT7109
Name of the discipline	Mathematical programming
Number of credits (ECTS)	5
Course, semester	1 , 1
Department name	IS
Course author (s)	Doctor of Technical Sciences, prof. Sinchev B.K.,
Prerequisites	Mathematical analysis, Probability theory and mathematical statistics
Postrequisites	Master's thesis defense
The purpose of studying the discipline	Creation of analytical optimization methods - creation of effective computational methods for obtaining an approximate solution of optimization problems

Brief description of the course (main sections)	Linear programming problems, construction of basic plans, simplex methods, artificial basis method, general transportation problem, convex programming problems, optimization of dynamic systems, dynamic programming methods are studied.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	To master: methods of optimization of linear, non-linear and dynamic programming; know: the main optimization methods used in practice; work out: skills of algorithmizing and programming of scientific research results.

Description of the discipline	
Discipline code	SFT7121
Name of the discipline	Creative thinking modeling
Number of credits (ECTS)	5
Course, semester	1 , 1
Department name	IS
Course author (s)	Doctor of Technical Sciences, prof. Naizabayeva L.K.
Prerequisites	Probability theory and mathematical statistics
Postrequisites	Master's thesis defense
The purpose of studying the discipline	training undergraduates in modern means of implementing modules for solving problems of data processing and analysis, the formation of students' fundamental theoretical knowledge in the field of application of data analysis methods. Data analysis will be carried out using some sections of probability theory.
Brief description of the course (main sections)	This course is based on the basic concepts of probability theory and teaches you how to study models with which you can make predictions. Model analysis helps us make better decisions and apply the best strategies. In big data, such training helps to analyze the success of a company's business, model human thinking, predict large processes, analyze and study the economic growth of countries. Data analysis can be carried out using such sections of probability theory as: Markov processes, Lyapunov function, Learning models, Dynamics of replicators and other interesting models.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	Master students who successfully complete the course will be able to: 1. know Markov processes, Lyapunov function, learning models, replicator dynamics, analyze the success of the company's business. 2. analyze models of human thinking, predict large processes, analyze and study the economic growth of countries, apply models and methods of data analysis. 3. use the ability to design institutions and procedures to help make better decisions and apply better strategies.

Description of the discipline	
Discipline code	MAT7100
Name of the discipline	Application of mathematics and statistics in IT
Number of credits (ECTS)	5
Course, semester	1 , 1
Department name	IS
Course author (s)	Doctor of Technical Sciences, prof. Sinchev B.K.
Prerequisites	Probability theory and mathematical statistics
Postrequisites	Master's thesis defense

The purpose of studying the discipline	Assessing the influence of ethical considerations in the practice of mathematics and statistics through participation in a relevant engineering project
Brief description of the course (main sections)	This Course serves as a base class for Scientific Computing and is designed to teach you if you are pursuing a career in Computing and Engineering. This course provides a broad overview of numerical methods for solving all major problems in scientific computing, including linear and non-linear equations, least squares, eigenvalues, optimization, interpolation, integration and differentiation, ordinary differential equations. Students will learn how computational methods are created and how they are used to solve problems that arise in science and technology. Matlab environment and solution of equations. Linear algebra. Functions and data. Differential equations. Nonlinear systems.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	- recognize the importance and value of mathematical and statistical thinking, learning and approach to solving problems in various disciplines; - be familiar with many examples where mathematics or statistics help to accurately explain abstract or physical phenomena; - recognize and appreciate the relationship between theory and applications; - independently read mathematical and statistical literature of various types, including review articles, scientific books and online sources; - present a real life problem in mathematical form ; - access data and information and evaluate their quality through practical application with an appropriate engineering project .

Description of the discipline	
Discipline code	SFT7125
Name of the discipline	Project communication management
Number of credits (ECTS)	4
Course, semester	1 , 1
Department name	IS
Course author (s)	Doctor of Technical Sciences, Professor Naizabayeva L.K.
Prerequisites	Psychology
Postrequisites	Project quality and risk management
The purpose of studying the discipline	Train undergraduates in managing communications in a project, plan communications, manage communications with each group and stakeholder.
Brief description of the course (main sections)	This course is aimed at teaching undergraduates how to communicate through the construction of a plan. Each company has a project communication plan - this is a document that says how it is necessary to communicate in the project and who and what information on the project should receive. The purpose of a communications plan is to identify all the people who are interested in the project and document how and when they will communicate with the manager and other team members. From recent studies, 56% of a project's budget can be wasted due to -poor communication. These are data from a study by the Project Management Institute (PMI). Communication management is one of the basic skills of a project manager.

Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	Master students who successfully complete the course will be able to: 1. Know the theoretical and methodological foundations of project management and distinguish between types of IT projects. 2. Collect and analyze the requirements of project stakeholders; analyze the stages of the project. 3. Apply: IT project quality management methods; plan basic approaches to the formation of the project team; be able to motivate the project team. 4. Develop a project management strategy and tactics to solve the problem of optimal management.

Description of the discipline	
Discipline code	PM7102
Name of the discipline	Intelligent methods of managing IS and projects
Number of credits (ECTS)	5
Course, semester	1 , 1
Department name	IS
Course author (s)	Cand.of techn.sciences, Associate Prof. Pashchenko G.N.
Prerequisites	Psychology, Introduction to Machine Learning
Postrequisites	Master's thesis defense
The purpose of studying the discipline	The objectives of mastering the discipline are the study of intelligent methods for managing information systems and projects and the preparation of undergraduates in the field of application of modern intelligent methods for solving difficultly formalized tasks that require large computing power.
Brief description of the course (main sections)	The study of the discipline is aimed at preparing undergraduates to solve practical data processing problems using modern intelligent problem solving methods, including using the neural network method used for data processing, forecasting and clustering. Neural networks allow solving various non-formalized problems of data processing, forecasting and clustering of unstructured data without preliminary formulation of hypotheses. Supervised Machine Learning: Regression. Data separation and cross-validation. Supervised Machine Learning: Classification. logistic regression. nearest neighbors. Support vector machines. Decision trees Ensemble models. Unsupervised machine learning.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	Use practical skills in the implementation and practical application of intelligent methods for managing information systems and projects; analyze the digital infrastructure of the organization; apply methods for optimizing business processes and evaluating the effectiveness of information resources; apply neural networks in data analysis; use neural networks in the information infrastructure of the organization.

Description of the discipline	
Discipline code	SFT7103
Name of the discipline	Decision support systems
Number of credits (ECTS)	4
Course, semester	1 , 2
Department name	IS
Course author (s)	Mohammed A. Hamada, PhD , Associate Professor
Prerequisites	Creative thinking modeling, Project communication management
Postrequisites	Master's dissertation

The purpose of studying the discipline	1. Recognize the role of decision support systems and their potential to assist in decision making in the organization and at the individual level. 2. Review and explanation of concepts and theories related to decision support systems, computerized decision aids and executive information systems. 3. Clarify the relationship between decision support systems and business intelligence. 4. Create and analyze decision models using various notations and methods. 5. Architect the decision support system (DSS). 6. Identify the types of problems that can be effectively solved using decision support systems and intelligent systems. 7. Recognize user interface issues when developing systems to help decision makers. 8. Develop students' critical thinking, analytical thinking, and problem-solving skills. 9. Improving the skills of analysis, development and implementation of computerized decision support systems.
Brief description of the course (main sections)	Decision support systems (DSS) are computer systems that include mathematical and analytical models, information databases, and a user interface to help managers make the right decisions. This module provides the student with a comprehensive guide to revolutionary decision support system methodologies and technologies and how they can be used to make better decisions by recognizing the different types of decision support systems that are used in the workplace. The module introduces the concepts of modeling and simulation in decision making and then provides a detailed overview of the use of modern IT technologies in DSS , such as data warehousing, data mining, OLTP and OLAP , knowledge management, artificial intelligence, and expert system. In addition, this course provides the student with the knowledge to develop and analyze software systems that coordinate data, modeling, algorithms and a user-friendly interface to create an environment for automatic or interactive decision making.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	- Select appropriate modeling techniques to support semi-structured and unstructured decision making, identify and select suitable decision support systems to generate innovative business decisions. - Develop and implement decision support systems to generate innovative business solutions, recognize the link between business information needs and decision making - Assess the general nature and range of decision support systems, assess issues related to the development of DSS, analyze, design and implement DSS - Use modern technologies to facilitate decision-making processes.

Description of the discipline	
Discipline code	SFT7128
Name of the discipline	IS Modeling and Design
Number of credits (ECTS)	4
Course, semester	12
Department name	IS
Course author (s)	PhD , Assistant Professor Bisarinova A.T.
Prerequisites	Creative thinking modeling, Project communication management
Postrequisites	Master's thesis defense

The purpose of studying the discipline	And the study of the principles and methods of studying the dynamics of the functioning of complex systems and objects .
Brief description of the course (main sections)	Acquaintance with modern methods of information systems (IS) design: requirements formation, conceptual design, application specification, model development, information system integration and testing. The study of the discipline gives knowledge about the methodology of structural systems analysis and design; technologies, standards and design tools for information systems of various subject areas; IS data models; main stages of IS design and IS life cycle models; assessing the quality of IS projects. Based on the acquired knowledge, the skills to carry out the design of IS are formed from the stage of setting the problem to software implementation; navigate the methods and tools used to develop IS; determine the effectiveness of the chosen solutions.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	To know modern methods of analysis of information systems and processes, the apparatus for simulating random and non-stationary parameters of complex systems. Have the organization of computational experiments and the use of an object-oriented apparatus for the analysis and modeling of information processes and systems. To know and be able to choose the organization's IS architecture, the principles of analysis, modeling and design of IS and databases, the basics of designing and implementing IS for automation, the skills of modeling business processes using UML, the methodology of function-oriented and object-oriented descriptions of the subject area and system analysis. Be able to apply intelligent simulation tools, computer modeling technology in the design of information systems, develop IS models, integrate and test the information system;

Description of the discipline	
Discipline code	SFT7113
Name of the discipline	Analysis and processing of unstructured data
Number of credits (ECTS)	4
Course, semester	2, 3
Department name	IS
Course author (s)	Altaeva A.B., PhD , assistant professor
Prerequisites	Introduction to machine training _
Postrequisites	Master's dissertation
The purpose of studying the discipline	Learn to take into account more information about the company's activities, identify hidden patterns for the formation of new control actions on business processes .
Brief description of the course (main sections)	The course examines methods for systematically extracting quantitative information from unstructured data for practical and scientific purposes, from classical analysis to classification methods. The course lays the theoretical foundation for the analysis of unstructured data, but mainly takes a very practical and applied approach, so that students learn to apply these methods in real research. The general thrust of all methods is that they can be reduced to a three-stage process: first, the identification of texts and blocks of texts for analysis; secondly, extracting quantified characteristics from texts - such as content categories, word counts, word types, vocabulary or part of speech counts - and converting them into a quantitative matrix; and third, using quantitative or statistical methods to analyze this matrix to draw inferences about texts or their authors. The course systematically covers these methods in a logical progression, with a hands-on, hands-on

	approach where each method will be applied using the appropriate real text software. To introduce students to the concepts of the most popular methods for analyzing unstructured data, from modern classics in the field of collective learning, clustering and topic modeling to some of the latest developments in deep neural networks for text, image and time series analysis. Text analysis systems. Methods for preprocessing text mining. Natural language processing. Search for information. Visual recognition and tracking in large sets of images and video data.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	- Learn how to convert text to Tidytext format - Extract emotion and tone from text using sentiment analysis - Understand what makes a document unique in a collection, understand how words and tokens are related and visualize them - Import and export text data in R , classify documents into groups using topic modeling - Build models that accept as input text features

Description of the discipline	
Discipline code	PM7103
Name of the discipline	Project quality and risk management
Number of credits (ECTS)	4
Course, semester	12
Department name	IS
Course author (s)	Candidate of Technical Sciences, Associate Professor, Alimzhanova L.M.
Prerequisites	Creative thinking modeling, Project communication management
Postrequisites	Master's thesis defense
The purpose of studying the discipline	The purpose of the course is to master the methods and principles of project risk management based on the analysis of statistical data. Evaluation of negative scenarios for the development and implementation of the project. Criteria for the quality of projects and the principles and methods of its management will also be mastered.
Brief description of the course (main sections)	Undergraduates in the process of studying the course will master the methods and tools for identifying, identifying, analyzing, evaluating and managing various threats, risks, negative scenarios for processes or projects implemented in the company. At the same time, methods of statistical data analysis will be mastered. As a result, undergraduates will learn how to build risk management strategies, knowing how to assess the costs of preventing negative scenarios. Also, in the process of studying the course, the criteria, principles and methods of project quality management will be studied.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	- Apply risk management methods for projects, manage quality, project deadlines based on the adoption of optimization decisions for the project. - Conduct an analysis of the impact of various project parameters on the threat of violating the deadlines, quality, technical characteristics of the final product. - Analyze the total and portfolio risk of the project, master the principles of building forecasts for project implementation based on statistical data analysis

Description of the discipline	
Discipline code	PM7106
Name of the discipline	IT and strategic management methods in the project
Number of credits (ECTS)	4

Course, semester	2, 3
Department name	IS
Course author (s)	Candidate of Technical Sciences, Associate Professor, Alimzhanova L.M.
Prerequisites	Psychology, Project communication management
Postrequisites	Master's thesis defense
The purpose of studying the discipline	Formation of the ability to manage the quality, risks and changes of an IT project to create software solutions aimed at achieving the strategic objectives of an organization or an individual project.
Brief description of the course (main sections)	In the process of studying the course, undergraduates will master effective methods and tools of production management in order to ensure sustainable competitiveness in the long term in the face of constant changes in the business environment. Undergraduates will also learn the basics of conducting investment analysis in the process of introducing innovations, as well as finding effective sources of financing, including banks, the public sector, investment and venture funds and the possibility of participating in state support programs. The skills of building strategically sound business processes in projects and enterprises will also be mastered and consolidated.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	- Apply business object management techniques and develop business strategies for the organization - Conduct an analysis of the digital infrastructure of the organization, apply methods for optimizing business processes and assess the effectiveness of information resources; - Apply IT and improve project management methodology, analyze the effectiveness of innovations in the management processes of organizations, in the technical parameters of the final product. - Own the methods and tools of production management in order to ensure sustainable competitiveness in the long term - Conduct investment analysis and effective search for funding sources

Description of the discipline	
Discipline code	SFT7135
Name of the discipline	Tools and platforms for building predictive models
Number of credits (ECTS)	4
Course, semester	2, 3
Department name	IS
Course author (s)	Altaeva A.B., PhD , assistant professor
Prerequisites	Data Mining, Machine Learning Methods
Postrequisites	Master's thesis defense
The purpose of studying the discipline	Acquisition of skills in using tools and platforms in building predictive models of business tasks and forecasting business processes, forming a culture of scientific justification for making managerial decisions. The use of predictive information as the basis for a preliminary assessment of the consequences of decisions made, the formation of undergraduates' knowledge in the field of applying forecasting models and methods to various tasks of business analysis.
Brief description of the course (main sections)	The methodological foundations of forecasting, organization of forecasting processes, classification (typing) of forecasts, forecasting models and methods, functional forecasts, corporate forecasting methodology are studied.

Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	- Know the methods of organizing the processes of forecasting the social and economic development of various industries. - Be able to predict using various methods, tools and platforms the main indicators of the enterprise. - Own methods of analysis and forecasting, substantiation of needs, goals, priorities for the development of enterprises; methodology for developing strategic plans and forecasts, indicators, programs and projects for the development of the organization.

Description of the discipline	
Discipline code	SFT7124
Name of the discipline	Cloud computing for big data analytics
Number of credits (ECTS)	4
Course, semester	2, 3
Department name	IS
Course author (s)	Khusainova G.Zh., PhD
Prerequisites	Introduction to Machine Learning
Postrequisites	Master's thesis defense
The purpose of studying the discipline	The goal of the course is to introduce students to data mining and machine learning algorithms for analyzing very large amounts of data or big data.
Brief description of the course (main sections)	The following aspects are considered within the discipline: 1. Get acquainted with the fundamental concepts of big data management and analytics; 2. Learn to recognize the problems faced by applications that work with very large amounts of data, as well as offer scalable solutions for them; 3. Understand how big data affects business intelligence, scientific discovery and our daily lives. Map systems Reduce and No SQL will be used as tools/standards to create parallel algorithms capable of handling very large amounts of data.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	1. Know the fundamental concepts of big data management and analytics. 2. Create parallel algorithms capable of processing very large amounts of data. 3. Be skilled at analyzing very large amounts of data. 4. Understand, use and create practical systems for analyzing and managing big data. 5. Provide a basic understanding of the issues and challenges associated with massive online repository systems, knowledge of current practices to meet the needs of such a system, and an indication of current research approaches that are likely to provide a basis for future solutions.

Description of the discipline	
Discipline code	MGT7100
Name of the discipline	IT project management
Number of credits (ECTS)	4
Course, semester	1 , 2
Department name	IS
Course author (s)	Candidate of technical sciences, assoc. prof. Serbin V.V.
Prerequisites	Creative thinking modeling, Project communication management
Postrequisites	Master's thesis defense

The purpose of studying the discipline	The purpose of teaching the discipline is to acquire undergraduates knowledge, skills and abilities to manage content, customer requirements, deadlines, cost, quality, communications, risks, changes, suppliers, human resources, as well as management of integration when organizing and participating in projects in the field of information technology.
Brief description of the course (main sections)	The discipline is devoted to the theoretical and practical study of project management, such as: content, timing, cost, quality, human resources, communications, risks and suppliers in project management in the field of information technology. Practical exercises are devoted to the organization of project management documents as a means of communication between members of the project team.
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	- distinguish types of IT-project; IT project life cycle and its phases; organizational structure of the IT project; basic standards in the field of project management; process groups IT project management ; IT cost management principles project; IT project quality management methods; basic approaches to the formation of an IT project team; IT project risk assessment methods; the structure of the logistics system of the IT project; - collect and analyze the requirements of the stakeholders of the project; - draw up technical specifications; - develop an application, project charter; - to calculate the feasibility study of the cost of IS development; - draw up an IT project plan; - develop technical documentation for the project; - motivate the project team of the IT project.

Description of the discipline	
Discipline code	SFT7111
Name of the discipline	Econometric Information Technology
Number of credits (ECTS)	4
Course, semester	2, 3
Department name	IS
Course author (s)	Candidate of Technical Sciences, Associate Professor, Alimzhanova L.M.
Prerequisites	Probability theory and mathematical statistics
Postrequisites	Master's thesis defense
The purpose of studying the discipline	Mastering the set of mathematical methods used to quantify economic phenomena and processes; training in econometric modeling, i.e., the construction of economic and mathematical models, the parameters of which are estimated by means of mathematical statistics; training in the empirical derivation of economic laws; preparation for applied research in the field of economics, etc.
Brief description of the course (main sections)	In this discipline, the main types, features of functioning and areas of application of econometric modeling of processes are studied, a detailed overview and description of the most important methods of statistical processing of various data are given, as well as a practical interpretation of the results obtained. To do this, a detailed study of the data is carried out, taking into account the elements of uncertainty in the application to specific applied tasks, the application of the results obtained. In the process of learning activities, individual projects or a series of experiments are implemented using econometric processing of related data in order to solve various practical problems.

Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	– list existing types of econometric models – apply various statistical data processing methods and their interpretation. – apply data processing methods both for the general population and for meaningful samples. – Determine the degree of sensitivity of the studied values from the factors of influence. – Determine the degree of correlation between different datasets. – Build models of the studied quantities from input parameters with a high degree of uncertainty. – apply various types of measurement of the reliability and relevance of the results obtained. – justify the choice of a certain set of statistical quantities for practical application and interpretation of experimental results. – solve practical problems using econometric modeling.

Description of the discipline	
Discipline code	SFT7136
Name of the discipline	Technologies and tools for data analysis
Number of credits (ECTS)	4
Course, semester	2, 3
Department name	IS
Course author (s)	Candidate of Technical Sciences, Associate Professor Sembina G.K.
Prerequisites	Probability theory and mathematical statistics
Postrequisites	Master's thesis defense
The purpose of studying the discipline	The study of various technologies and tools for data analysis, the formation of practical skills in the development of data analysis models, the use of software tools and analytical platforms to perform data analysis. Course objectives: to equip undergraduates with theoretical knowledge and practical skills necessary for: – formation of ideas about the role and place of data analysis; – study and application of various technologies, methods and models of data analysis; – using methods, models, tools and platforms to perform quantitative and qualitative data analysis; – multidimensional data analysis; – performing an ETL process: extracting, transforming and loading data; – compiling reports, dashboards, interpreting the data received in them; – development of management decisions based on the analysis of simulation results.
Brief description of the course (main sections)	This discipline studies the basic principles, features, technologies, methods, models, platforms and tools for data analysis, methods for discovering new knowledge in data warehouses, the basic concepts of data mining. The main sections of the course: Data analysis technologies. Methods of data analysis. New knowledge search models, correlation, regression, time series forecasting, clustering, associations, sequences. Business intelligence technologies: DM technologies, data visualization and solutions systems, report generators. Techniques for discovering new knowledge in data warehouses. Basic concepts of data mining. Business Intelligence Platforms. Analytical

	platform MS Power BI. Power Query Editor. ETL process. Relational data model. Filtering data with MS Power BI. Working with Data Analysis Expressions (DAX). DAX functions. Practice creating interactive UI/UX elements. Data visualization in Power BI. Review of PowerBI.com, Mobile App .
Expected results of the study (acquired by students knowledge, skills, abilities and competencies)	- Be able to conduct a systematic analysis of the subject area of research; use various sources of information for data analysis; work with large data sets; choose rational methods and analytical functions for data analysis; use the capabilities of the analytical platform. - Possess the skills of logical thinking, critical perception of information; technologies, methods, and techniques for conducting quantitative and qualitative data analysis; skills in analyzing, evaluating, and predicting the state of the situation in the organization using analytical platforms and tools; skills in performing ETL process: extracting, transforming and loading data; the ability to compile analytical reports, dashboards and interpret the data obtained in them. - Be competent in perception, generalization and analysis of information, setting a goal and choosing ways to achieve it; apply appropriate methods of analysis and tools for processing, analyzing and systematizing information on the research topic; generate reports based on multivariate data analysis; development of management decisions based on data analysis.