SAGRIS module content Module 3: Advanced methods of scientific working

Outcomes: Competence code and name Code and name of the indicator of competence achievement	Name of topics	Types of work (hours)					Teaching/Learning forms	Forms of assessment
		Presence / contact work				Individual work / Self work		
		Lectures	Lab works	Practical works	Other (e.g. consultation)			
	1 Semester							
(C1) PhD are able to design a scientific research project with a logical structure such that methods used generate data that can be analyzed to yield results that fulfill the aim and objectives **(C2)** Managing quantitative research data **(C3)** Managing qualitative research data	**Topic 1. Research data management (0,8 ESTC / 24 hrs)**							
	1.1 The main stages of scientific research (state of the problem) ***Pismennaya E., Margareta Lelea (***DITSL***), Bezgina Yu. (***SSAU***)***	2		2		2	Overview lecture	Oral interview
	1.2 The formulation of the objectives of the study ***Bezgina Yu., Pismennaya E.***	2		1		2	Conference Workshop	Colloquium
	1.3 Development of own solutions (goals setting) (Program development and selection of research methods) ***Pismennaya E., Maznitsyna L. (***SSAU***)***	2				2	Lecture-consultation	Oral questioning
	1.4 Processing and analysis of research data, and their comparative analysis with existing analogues ***Bezgina Yu., Margareta Lelea, Pismennaya E.***			2		1	Problem lecture Seminar – discussion	Oral questioning
	1.5 The correct formulation of the results ***Pismennaya E., Maznitsyna L.***		4			2	Laboratory work	solving experimental problems (tasks)

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Competence 1 (C1) To be introduced to the process of how to write up scientific research results and how to potentially publish them in internationally high ranking journals.. **Knowledge 1 (C1K1)** To know the rules and principles of writing scientific publications, including formulation of research hypotheses, method description and discussion of results. **Knowledge** 2 **(C1K2)** To know the rules of authorship, copyright and ethics of scientific publishing.	**Topic 2. Scientific publishing, incl. methods of literature research (0,6 ESTC / 18 hrs)**							
	2.1 Defining a topic for scientific publication and formulating a hypothesis ***Ivan M. Dubovsky, Axel Schwerk (***WULS***)***	1					Problem lecture	Oral interview
	2.2 Methods of research work with databases of scientific articles and data bases on scientific journals/publishing houses ***Bezgina Yu., Ivan M. Dubovsky (***NSAU***)***		2			1	Case analysis, computer exercises	Oral questioning
	2.3 Planning of research design and embedded experiments for subsequent scientific publications. ***Ivan M. Dubovsky, Margareta Lelea, Ekaterina Grizanova (***NSAU***)***	1		1		1	Lecture, project work	Oral questioning
	2.4 Principles of writing a scientific publication on the materials of the works. ***Ivan Dubovskiy, Axel Schwerk, Margareta Amy Lelea, Inga Rumkina (***NSAU***)***	2		2		2	Lecture, project work	Colloquium
	2.5 Choosing the journal, submission and promotion of scientific publication. ***Ivan Dubovsky, Axel Schwerk, Ekaterina Grizanova, Lyazzat Seleuova***	1		1		1	Lecture, project work	Oral interview
	2.6 Ethics of publishing. ***Ivan Dubovskiy, Axel Schwerk, Margareta Amy Lelea, Inga Rumkina***	2					Lecture – discussion	Oral questioning

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Competence 1 (C1) PhD students are able to critically analyze and evaluate modern scientific achievements, generate new ideas in solving research and practical problems, including in interdisciplinary areas. **Competence 2 (C2)** PhD students are able to independently carry out research in the relevant professional field using modern methods of statistics ICT.	**Topic 3. Advanced statistical methods (0,8 ESTC / 24 hrs)**							
	3.1 Introduction to modern methods of organizing centralized and distributed databases (including spatial, temporal, streaming and high availability). ***Gulden Murzabekova, Ismailova Aliya (***KATU***)***	2	2	1		1	Visualization lecture/ Preparation for lab work/The solution of experimental tasks /Self study of materials	Oral interview /Testing /Laboratory Report Preparation
	3.2 Modern methods of organizing mass parallel data processing. ***Gulden Murzabekova, Ismailova Aliya***	2	2	1		1	Visualization lecture/ Preparation for lab work/The solution of experimental tasks /Self study of materials	Oral interview /Testing /Laboratory Report Preparation
	3.3 Modern models of knowledge representation. ***Gulden Murzabekova, Ismailova Aliya***	2	2			2	Visualization lecture/ Preparation for lab work/The solution of experimental tasks /Self study of materials	Oral interview /Testing /Laboratory Report Preparation
	3.4 Modern statistical data analysis methods. ***Nadezhda Meleshenko, Aizhan Ibyzhanova (***WKATU***), Olga Mikhailova (***ABKSU***)***	2		2		2	Visualization lecture/ Preparation for lab work/The solution of experimental tasks /Self study of materials	Oral interview /Testing /Laboratory Report Preparation

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Competence 1 (C1) To be able to present and visualize scientific research data at different levels of a research cycle for a target group. **Knowledge 1 (C1K1)** To know the methods for identifying target groups for scientific presentations. **Knowledge 2 (C1K2)** To know how to realize the setting of an objective and the logic of a presentation and how to identify a structure and a plan of the presentation.	**Topic 4. Target group oriented presentations (poster, ppt...) (0,6 ESTC / 18 hrs)**							
	4.1 Elaboration of a presentation ***E.V. Grizanova, A.D. Mankhanov (***BSAA***)***	2				1	Problem lecture	Oral questioning
	4.2 Structure and plan of a presentation ***E.V. Grizanova, A.D. Mankhanov***			2		1	Practical work	Oral questioning
	4.3 Criteria of a well-done presentation ***A. Mankhanov, M. Grigoriev (***ASAU***), Y. Bezgina***			2		1	Round table discussion	Presentation
	4.4 Situational control of a presentation (be attractive and interesting to the target audience) ***E.V. Grizanova, Yu. Bezgina, A.D. Mankhanov***	2				1	Lecture – discussion	Oral questioning
	4.5 The style of a presentation ***E.V. Grizanova, A.D. Mankhanov***			2		1	Practical work	Oral questioning
	4.6 Technical maintenance of presentation ***A. Mankhanov, M. Grigoriev, Y. Bezgina***			2		1	case analysis, project work	Case study / Control work

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Competence 1 (C1) To be qualified to develop, write and submit a proposal for a national or international scientific grant. **Knowledge 1 (C1K1)** To know the specifics of financing and performing research within the frame work of state and other targeted programs. **Knowledge 2 (C1K2)** To know how to identify key sections and requirements of the tender documentation, the main stages of competition and preparation of the	**Topic 5. Writing grant proposal (0,6 ESTC / 18 hrs)**							
	5.1 Purpose and stages of application writing. ***Assiya Ansabayeva*** (ABKSU)	2					Lecture – discussion	Oral questioning
	5.2 Find and Select Grant Application Funding Sources. ***Lyazzat Seleylova*** (ABKSU)	3					Seminar – debate	Oral questioning
	5.3 Principles for writing grant applications. ***Lyazzat Seleylova***			3			Seminar – discussion	Coloquium
	5.4 Principle of successful grant application. ***Irina Dranaeva***	2					Problem lecture	Oral questioning
	5.5 Command generation principle. ***Assiya Ansabayeva*** (ASAU)			3			Round table	Oral questioning
	5.6 Criteria of evaluation of project application. ***Irina Dranaeva***			2			Case study	Presentation
	5.7 Opportunities to organize support for research in Kazakhstan / Russia. ***Irina Dranaeva***					3	Independent work (grant proposal preparation)	Test

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application.								
Competence 1 (C1) PhD students are able to understand the classification of project management stages, analyze and evaluate new market opportunities for the formulation and implementation of project ideas. **Competence** 2 (C2) PhD students are able to use project and time management tools at various stages of the project life cycle, to make a qualitative and quantitative assessment of project risks, to determine the effectiveness of the project.	**Topic 6. Project and time management (0,8 ESTC / 18 hrs)**							
	6.1 Pre-investment stages of the project. ***A. Ismailova (KazNARU), Yu. Bezgina (SSAU)***	2		1		2	Lecture-visualization; Creation of the project. Self - study on primary and secondary literature materials.	Survey/ Test form survey/ Control work
	6.2 Development of the organizational structure. ***Saule Yessengazieva, Damira Aitmukhanbetova (KazNARU)***	2		1		2	Lecture-visualization with exercises, project development	Survey/ Test form survey/ Case study / Control work
	6.3 Management: costs, risks, etc. ***Damira Aitmukhanbetova, Yessengaziyeva Saule***	1		1		2	Lecture-presentation; Solving problems in the financial part of the project	The survey in the test form/ Calculations
	6.4 Modern time management tools and strategies. ***Yu. Bezgina, A. Ismailova***	1		1		2	Lecture-discussion case analysis, project work	Tests, survey

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