ОПИС ДИСЦИПЛІНИ

The discipline «Statistical methods in Land Management» provides a study of the fundamentals of the use of mathematical and statistical methods and applied processing of geodata and indicators of the state of land relations based on the use of modern computer technology.

The task of studying the discipline is the formation of a specialist's theoretical knowledge and practical skills of mathematical and statistical methods of processing geospatial data and their further practical use based on computer technology (spreadsheets and software packages for statistical data analysis) in analyzing data and indicators of land relations and land cadastral data.

The discipline provides the formation of a number of competencies:

- *general competencies*:

GC01. Ability to learn and master modern knowledge.

GC02. Ability to apply knowledge in practical situations;

GC07. Ability to work autonomously;

GC12. The ability to exercise their rights and responsibilities as a member of society; awareness values of civil (free democratic) society and its necessity sustainable development, the rule of law, rights and human and civil liberties in Ukraine;

GC13. Ability to maintain, multiply moral, cultural, scientific values and achievement of society based on understanding history, patterns of subject development area, its place in the general system of knowledge about nature and society, as well as in development society, machinery and technology, use different types and forms of motor activities for recreation and healthy eating lifestyle.

- *special competencies*:

SC01. Ability to apply fundamental knowledge for the analysis of natural phenomena and

of technogenic origin at performance professional tasks in the field of geodesy and

land management;

SC02. The ability to apply theories principles, methods of physical and mathematical,

natural, socio-economic, and engineering sciences in the performance of geodesy tasks

and land management;

SC03. Ability to apply regulations, regulatory and technical documents, reference materials in professional activities;

SC04. Ability to choose and use effective methods, technologies and equipment

to carry out professional activities in the field geodesy and land management;

SC05. Ability to use modern information, technical and technological support to solve complex issues of geodesy and land management;

SC06. Ability to perform remote, ground, field and in-house research, engineering calculations for processing research results, draw up research results, prepare reports in solving problems of geodesy and land management;

SC07. Ability to collect, update, process, critically evaluate, interpret, store, publish and use geospatial data and metadata on objects of natural and man-made origin.

Program results:

RS02. Organize and manage professionally development of individuals and groups;

RS03. Inform specialists and non-specialists information, ideas, problems, solutions, own

experience and argumentation;

RS04. Know and apply in professional activities of legal acts, regulatory and technical documents, references materials in the field of geodesy and land management and related industries;

RS05. Apply conceptual knowledge of natural and socio-economic sciences in performing tasks of geodesy and land management;

RS09. Collect, evaluate, interpret and use geospatial data, metadata on objects of natural and man-made origin, apply statistical methods of their analysis to solve specialized problems in the field of geodesy and land management;

СТРУКТУРА КУРСУ

Тема	Години	Результати навчання	Завдання	Оцінювання
3 семестр				

CONTENTS MODULE I. THE BASIS OF THE THEORY OF THE POSSIBILITY AND THE BASIC STATISTICAL INDICATORS.				
Topic 1. The main provisions of probability theory and mathematical statistics	2/4	Know the basic concepts and definitions. Introduction to the basics of probability theory and the formation of an understanding of the term "statistics". Understand the difference between probability theory and reality. Know the rules of action with probable events and the probabilities of their implementation.	Execution of the laboratory and its delivery (including in elearn).	4
Topic 2. Elementary analysis of geodata and indicators on the state of land relations	2/4	Understand the basics of elementary statistical analysis. Know the basic statistical analysis on the example of geodata and indicators on the state of land relations in relation to the number of owners and land users of land plots and their areas. Be able to work with tables, graphs and charts.	Execution of the laboratory and its delivery (including in elearn).	4/2
Topic 3. Basic statistical models. Basic statistics of data and indicators on the state of land relations	2/4	Understand the concepts of statistical models and their types. Develop basic statistical models based on geodata and indicators on the state of land relations in relation to rating. Know the classification and ranking of basic system features. Understand the concept of geodata grouping. Make statistical and variational series. Know the basic statistical characteristics of land management objects and factors and their calculation. Perform the distribution of land cadastral geodata, know the types of distribution and their characteristics.	Execution of the laboratory and its delivery (including in elearn). Performing independent work (including in elearn).	4/2

CONTENTS MODULE II. BASED ON STATISTICAL ANALYSIS OF LAND-MANAGEMENT GEODATA.				
Topic 4. Methods of statistical evaluation of averages	2/2/10	Know the types of land cadastral databases and geodata banks. Distinguish geoinformation modeling in automated land cadastral systems.	Execution of the laboratory and its delivery (including in elearn).	2/4
Topic 5. Statistical models of geodata and indicators on the state of land relations based on samples	2/4/5	Understand the concept of the general population and the sample on the example of geodata and indicators on the state of land relations for land valuation. Understand the concepts of repetition and repetition, imaginary repetition. Understand the concept of dimensional reduction and the choice of the most informative features. Know the basic ways of organizing the sample. Be able to perform point and interval estimates.	Execution of the laboratory and its delivery (including in elearn). Performing independent work (including in elearn).	4/2
Topic 6. Fundamentals of statistical analysis of sample geodata	2/2/6	Understand the concept of correlation and correlation analysis of geodata and indicators on the state of land relations. Perform regression analysis of estimated indicators. Perform analysis of variance - one-, two- and multifactor.	Execution of the laboratory and its delivery (including in elearn).	4/2
Topic 7. Multidimensional models of geodata	3/10/24	Know the basics of cluster analysis. Conduct factor analysis and principal components method. Perform discriminant analysis and canonical analysis. Analyze compliance and multidimensional scaling of geodata and indicators on the state of land relations. Execution of the laboratory and its	Execution of the laboratory and its delivery (including in elearn). Performing independent work (including in elearn).	

		delivery (including in elearn). Performing independent work (including in elearn).			
Всього	15/30/45	-	-	70
Екзамен	30	-	-	30
Всього за курс				100

ПОЛІТИКА ОЦІНЮВАННЯ

Deadline and recompilation policy:	Works that are submitted in violation of deadlines without good reason are evaluated at a lower grade. Rearrangement of modules takes place with the permission of the lecturer if there are good reasons (for example, hospital).
Academic Integrity Policy:	Write-offs during tests and exams are prohibited (including the use of mobile devices). Abstracts, presentations must have correct text references to the literature used.
Visiting policy:	Attendance is mandatory. For objective reasons (for example, illness, international internship) training can take place individually (in online form in consultation with the dean of the faculty).

ШКАЛА ОЦІНЮВАННЯ СТУДЕНТІВ

Рейтинг здобувача вищої освіти, бали	Оцінка національна за результати складання екзаменів заліків	
	екзаменів	заліків
90-100	відмінно	зараховано
74-89	добре	
60-73	задовільно	
0-59	незадовільно	незараховано