



Co-funded by the  
Erasmus+ Programme  
of the European Union

**Concept of educational and professional program**

**EDUCATIONAL MEASUREMENT.  
GENDER STUDIES: RESEARCH**

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15th January 2017

**DEVELOPERS OF THE CONCEPT**

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The volume of MA program	120 ECTS credits (3600 hours)
Educational level	Master
Branch of knowledge	01 Education
Specialty	011 Educational Sciences
Educational and professional program	Educational Measurement. Gender Studies: Research
Qualification	2433.1 Researcher (information analyst)
Apprenticeship	2 years

1	<b>Objectives of the program</b>	
	<p>To ensure students acquire knowledge, skills and understandings relating to educational measurement, including gender research in education and behavioral sciences, to give them possibilities to carry out their work independently.</p> <p>To prepare students for successful mastering of complex applications for scientific research and development, experts in communication, teachers, supervisors in educational and social structures, including structures that perform gender studies.</p>	
2	<b>Characteristics of the program</b>	
1	Subject area	Behavioral science: pedagogy, psychology, sociology, political science, and others.
2	Focus program	Research aspect of the program involves testing, evaluating, usage quantitative methods in gender studies
3	program orientation	Educational and professional program is practically oriented
3	<b>Carreer of graduates, employment and further education</b>	
1	<b>Career of graduates</b>	<ul style="list-style-type: none"> <li>– in education institutions of II-IV levels of accreditation;</li> <li>– in the departments of education of any level;</li> <li>– in the assessment centers of education quality;</li> <li>– in centers of testing;</li> <li>– in the scientific organizations involved in projects to assess the quality of education;</li> <li>– in the organizations offering services in the design tool for assessing the quality of education;</li> <li>– in HR-organizations and personnel services;</li> <li>– in the services of certification and in the organizations of licensing;</li> <li>– in the centers of certification of required skills;</li> <li>– in the scientific organizations involved in projects to assess the professional competencies and requirements for professional qualifications;</li> <li>– in organizations that perform gender research and develop new scientific approaches to improving methods of gender indexing, and others.</li> </ul>
2	Further education	Doctoral programs in behavioral sciences and statistics
4	<b>The style and methods of teaching</b>	
1	Approaches to Learning	Combining of lectures, practical and laboratory lessons, consultations, writing term papers, course projects, self-dependent work, training practices on educational measurement, design of diploma project
2	The assessment system	Written and oral exams, credits, defense of training practices, defense of coursework and course projects,

		particularly focused on gender studies, defense of diploma (qualification work), the state qualifying exam.
5	<b>Program competences</b>	
1	Social and personal competences	The ability to apply their knowledge and understanding, and ability to solve problems in new situations in a broader (or multidisciplinary) context than the educational measurement and gender studies.
		Ability to integrate knowledge, overcome difficulties and formulate judgments based on incomplete or limited data, taking into account ethical and social responsibility regarding their use.
		The ability to take responsibility for the management and transformation, which are characterized as a complex and unpredictable and require new strategic approaches, in terms of the chosen work, study
		The ability to carry out gender analysis of information in education, politics and economy.
		The ability to distinguish between theoretical approaches to the phenomenon of gender, to analyze the stages of its development, the main characteristics, social institution of gender.
2	general scientific competences	Knowledge of philosophy (including gender philosophy), psychology, pedagogy, that contribute to the development of general culture and socialization that lead a personality to ethical values.
		Knowledge of basic branches of mathematics in the volume which is necessary for mastering of mathematical tools in psychology, pedagogy; ability to use mathematical methods in educational measurement and gender studies.
		Knowledge of basic sections of statistics in the volume which is necessary to master the statistical tools of psychology and pedagogy; ability to use statistical methods in educational measurement and gender studies.
		Basic knowledge of computer science that are necessary for mastering general professional disciplines of educational measurement and Gender Studies.
		Knowledge of foundations of gender theory, modern trends in the study of gender relations, methodological aspects and terminology apparatus of Gender Studies.
		The ability to use knowledge of gender theory to apply gender approach in education.
3	Instrumental competences	The ability for business oral and written communication in modern Ukrainian and foreign language.
		The ability to write in a foreign language research reports and articles, particularly on gender issues.
		The ability to conduct scientific and applied research through information technology.

4	General professional competences	Knowledge of research methodology, Knowledge of methods of research and analysis of educational systems and processes, understanding the complexity of educational systems and processes, understanding of their variety and multifunctionality, interaction and conditions of existence for the solution of practical and scientific tasks in education and gender studies.
		Knowledge of mathematical methods for constructing and analyzing models of educational systems and processes and for development of new mathematically grounded tools and methods in education research.
		Knowledge of the requirements of applicable national and international standards in the field of education, methods and means of developing and monitoring their compliance.
		Knowledge of basic methods and approaches to the organization, planning, management and monitoring of work on the design, development and implementation of educational and social projects.
		Knowledge of basic methods and approaches to the organization, planning, management and monitoring of work on the design, development and implementation of educational and social projects.
		Knowledge of basic theoretical approaches, theories, basic and applied areas of pedagogy to solve scientific and applied problems in education.
		Knowledge of basic theoretical approaches, theories, basic and applied fields of psychology to solve scientific and applied problems in education.
		Knowledge of methods and techniques of gender analysis of school collectives, university collectives and other collectives.
		Knowledge of the methodology and methods of gender analysis of legal relations
		Knowledge of methods and techniques of gender analysis of political relations.
		Knowledge of the specific of construction of interdisciplinary approaches to gender analysis.
5	Specialized professional competences	The skills to select and apply methods of assessment and measurement appropriate for decision-making in education and professional selection, including gender-sensitive.
		The skills to interpret the results of the evaluation and measurement procedures.
		The skills to make decisions about individuals and groups of individuals based on the interpretation of the measurement and evaluation procedures results; skills to plan the learning process and skills to develop new and improve existing training and educational programs.

		the skills to make scaling and to inform stakeholders and wider social strata about the results of educational measurement, their interpretation and decisions based on these results.
		Knowledge of technical, legal and ethical requirements to means of evaluation and measurement; skills to determine compliance of means of assessment and measurement, procedures of their implementation and information on the results of their application with these requirements,
		Knowledge of methods and means of computerizing of the evaluation and measurement and analysis of their results, the skills to use them.
		The ability to select and develop procedures for monitoring educational programs and processes.
		The skills to select and to develop procedures for monitoring educational programs and processes.
		The ability to apply mathematical and statistical methods to process the results of gender studies in behavioral sciences.
		The ability to use statistical methods to calculate and compare statistical indicators of gender equality.
		The ability to analyze a present state and a future state, and make short-term and long-term forecasts of indicators of gender equality.

<b>Learning Outcomes</b>		
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1	<p>To be able to formulate the goals, tasks, object and subject of pedagogical research at the stage of planning the learning process.</p> <p>To be able to develop a program of empirical pedagogical research at the stage of planning the educational process and to select appropriate methods consistent with the objectives and terms of its conducting.</p> <p>To be able to analyze and describe the cultural environment, interests, skills and abilities of people, who study, in the educational process planning.</p> <p>To be able to distinguish theoretical approaches to the phenomenon of gender; to have an notion of social history, stages of development, the main characteristics of the phenomenon of gender.</p>	
2	<p>To be able to analyze gender relations in different societies, social processes and social institutions, to understand their characteristics.</p> <p>To be able to analyze the functioning of cognitive processes, to manage own cognitive activity and activities of persons enrolled.</p> <p>To be able to determine the purpose of psychodiagnostic research of cognitive processes, collect information on their progress and effectiveness.</p> <p>To be able to adopt effective methods to study cognitive sphere of personality.</p> <p>To be able to use diagnostic tools in compliance with ethical and psychometric requirements, to process the results.</p> <p>To be able to analyze and interpret the results of diagnostic studies, to draw conclusions</p>	

	<p>and predictions about the future development of cognitive properties of person.</p> <p>To be able to apply corrective and developing cognitive training techniques to work with students.</p> <p>To be able to identify and resolve contradictions of pedagogical process.</p> <p>To be able to use information and telecommunication technologies to analyze the results of formative assessment.</p>
3	<p>To be able to find the measures of position, of dispersion and a shape of distribution of random value which is measured in metric and non-metric scales.</p> <p>To be able to find the correlation coefficients for metric and non-metric variables, to construct a model of unidimensional and multidimensional regression analysis.</p> <p>To be able to construct an empirical distribution function, histogram, polygon distribution of the sample.</p> <p>To be able to find interval and point estimates of unknown parameters of distribution.</p> <p>To be able to use methods of testing statistical hypotheses.</p> <p>To be able to build a matrix and profiles of test answers.</p> <p>To be able to apply mathematical and statistical packages for processing the results of educational measurement.</p> <p>To be able to interpret the results of testing data in the design and application of the test.</p> <p>To be able to calculate basic statistical characteristics of test items within classical test theory and IRT.</p> <p>To be able to build items characteristic curves and curves of individual test takers.</p> <p>To be able to build informational curves of items and test.</p> <p>To be able to estimate latent parameters by method of moments and by method of maximum likelihood estimation within the IRT; be able to interpret the results.</p> <p>To be able to interpret psychometric characteristics of test items and tests.</p> <p>To be able to standardize the test.</p> <p>To be able to use the ANOVA, correlation and factor analysis in the design of the test.</p> <p>To be able to scale educational measurement results.</p> <p>To be able to equalize different versions of test on a single metric scale during the mathematical processing of results.</p>
4	<p>To be able to formulate the goals, tasks, object and subject of research on the educational process at schools, groups of schools of different types and regions.</p> <p>To be able to adopt a system of quality indicators for monitoring the quality of education at schools and groups of schools.</p> <p>To be able to plan and carry out comparative pedagogical research.</p> <p>To be able in research process to identify advanced pedagogical experience, to generalize and disseminate it; to make recommendations on the effective use of teacher qualifications, experience and capacity; to identify new problem situations; to detect errors</p>

	in the objectives, plans, standards, established by the administration of the institution or regional educational department.
5	<p>To be able to calculate the standard error of measurement.</p> <p>To be able to explore the characteristics of tests reliability in the classical and generalized tests theories</p> <p>To be able to investigate the validity of the test.</p>
6	<p>To be able to analyze the quality of the educational program from the positions of different customers and recipients of educational services.</p> <p>To be able to analyze the quality of management of the implementation of educational program.</p>
7	<p>To be able to determine optimal ways of implementing curricula and educational programs according to educational qualification level, taking into account modern conceptual approaches to training.</p> <p>To be able to allocate the psychological aspects of interdisciplinary problems of cognitive science and adopt the most appropriate approach to their decision.</p> <p>To be able to give pithy characterization of methods and organizational forms of university teaching, to substantiate their choice in specific situations.</p> <p>To be able to plan the process of distance learning.</p> <p>To be able to plan the students' research work.</p>
8	<p>On the basis of the results of pedagogical analysis, expertise and design of intellectually developed and personally oriented direction of education, to be able to apply modern educational technology in the process of selection and development of tools and methods of educational measurement, based on learning objectives, capabilities, abilities and personal characteristics of students, their aptitudes and interests in the process of learning activities.</p> <p>To be able to form the evaluation criteria in terms of taxonomy of learning objectives.</p> <p>To be able to formulate objectives and principles of test development and test items.</p> <p>To be able to create test items of different formes and types.</p> <p>To be able to work out specification of test items and tests.</p> <p>To be able to get psychometric characteristics of test items and tests.</p> <p>To be able to use banks of test items, accompanied with their psychometric characteristics for designing tests with specified characteristics.</p> <p>To be able to construct tests of abilities, tests of academic achievements, tests for licensing and certification of professional activity.</p> <p>To be able to examine the test and draw conclusions about its validity.</p> <p>To be able to design tests according the specific of pedagogical control in the field of humanities.</p> <p>To be able to design tests according the specific of pedagogical control in the field of natural sciences.</p> <p>To be able to compare tests during the design.</p> <p>To be able to use information and telecommunication technologies to administer the tests.</p> <p>To be able to provide expert evaluation of the computer testing means.</p>

	To be able to use virtual learning environment for evaluating and measuring the academic achievements of individuals and groups of individuals.
9	To be able to determine the circle of customers and recipients of educational services.
10	To be able to take critique constructively, be capable of self-criticism, to be able to assess and present the own experience and achievements, using methods and techniques of learning, getting new education and development of own personality. To be creative personality, to use a systematic approach to solving professional tasks, insistently achieve goals and qualitatively perform work in a professional field.
11	To be able to plan work on the design and development of system of evaluation and monitoring of the quality of education, to evaluate necessary time and labor outlays, to draw up technical specification and business plan, taking into account budget of project, staffing, skills development, etc. To be able to use methods of teaching of the elements of the Educational Measurement and Monitoring of the Quality of Education for education on all levels.
12	To be able to plan work on the design and development of system of standardized assessment, to evaluate necessary time and labor outlays, to draw up technical specification and business plan, taking into account budget of project, staffing, skills development, etc.
13	To be master on the techniques of making decisions on the basis of the evaluation procedures in educational and professional selection, taking into account the socio-economic needs of society, in compliance with social justice and cultural environment.
14	To be master of the tools of project management.
15	To be able to use in practice modern methods of input and intermediate evaluation and assessment. To be able to use information and telecommunication technologies for the formative evaluation.
16	to be able to use in practice modern methods of final assessment. To be able to use information and telecommunication technologies in the procedures of the final assessment.
17	To be able to use information and telecommunication technologies to administer means of standardized testing.
18	To be able to formalize the results of pedagogical assessment, to document them into form that is easy for examination and analyze, using the methods of visualisation. To be able to use information and telecommunication technologies to document students' assessment results.
19	To be able to collect from various sources and generalize information which is necessary for the research of quality of educational program. To be able to use information and telecommunication technologies for collection and preliminary processing of data which were got at the research of education program quality.
20	<i>Learning outcomes oriented on gender studies: the scientific aspect</i>
20.1	To be able to apply the basic principles of gender studies to analyze the phenomena and processes of the educational sphere. To be able to isolate, compare and generalize the factors of gender stratification. To be able to develop and implement a gender issue into the educational process.



	<p>To be able to detect gender inequality in various spheres of society by using statistical data.</p> <p>To be able to carry out gender expertise of different information content.</p> <p>To be able to carry out gender analysis of activity of the organization (or its unit).</p>
20.2	<p>To be able to detect the available types of data, to collect them, to use them for solving of the specific problems.</p> <p>To be able to define statistical concepts clearly.</p> <p>To be able to analyze, assess and disclose the content of statistical information, to identify cases where concepts are used without proper statistical substantiation.</p> <p>To be able to transfer statistical information, to identify key relations, causes of changes and direction of changes in the data; to be able to assess progress towards the goal through these changes.</p> <p>To be able to display statistics in tables and graphs correctly, to analyze their meaning in written and oral form.</p>
20.3	<p>To be able to perform content analysis of studied gender phenomena or processes described in the documents.</p> <p>To be able to develop different types of questionnaires, questions for interviews, questionnaires for gender studies in behavioral sciences.</p> <p>To be able to use sociometric procedure in gender studies.</p> <p>To be able to record, analyze and summarize the results of observation, interviews, surveys.</p>
20.4	<p>To be able to properly form the sample in different ways for gender studies in behavioral sciences.</p> <p>To be able to find basic statistical characteristics of the formed sample.</p> <p>To be able to determine the research relative error, calculate sampling error.</p> <p>To be able to find and evaluate the distribution of random variables which based on experimental data sample, using the goodness of fit and homogeneity criterion; apply non-parametric criteria of differences in gender studies.</p> <p>To be able to set the relationship between various gender events in the sample.</p>

### **Structure of Curriculum of Master Program “Education Measurements”**

<b>No</b>	<b>Course Title</b>	<b>Hours</b>	<b>ECT S</b>	<b>OB<sup>1</sup></b>	<b>SEL<sup>2</sup></b>	<b>LEC<sup>3</sup></b>	<b>WS<sup>5</sup></b>	<b>PR TR<sup>6</sup></b>
<b>1<sup>st</sup> Semester</b>								
1	Philosophy of Science	90	3	+		12	8	
2	Civil Protection	90	3	+		12	8	
3	Psychology of Higher School	90	3	+		16	4	
4	Methodology and organization of scientific research	90	3	+		12	8	
5	Design, simulation and parameterization of tests	360	12	+		50	48	
6	Pedagogical evaluation and monitoring of the quality of education	120	4	+		18	18	
7	<i>Selective courses</i>	90	3		+	10	18	
8	<i>Cousework</i>	60	2	+				

2 <sup>nd</sup> Semester								
9	Design, simulation and parameterization of tests	195	6,5	+		18	18	
10	Pedagogical evaluation and monitoring of the quality of education	75	2,5	+			18	
11	Computer technology in testing	180	6	+		18	36	
12	<i>Selective courses</i>	390	13		+	70	50	
13	<i>Courseproject</i>	60	2		+			
3 <sup>d</sup> Semester								
14	<i>Selective courses</i>	900	30		+	150	150	
4 <sup>th</sup> Semester								
15	<i>Internship</i>	360	12	+				
16	<i>Diploma design</i>	520	18	+				

**Short information about obligatory disciplines in the Master Program “Education Measurements”**

Philosophy of Science	<p>The aim of the course is to identify the specific intellectual activity type in the new information society; provision of training students in the field of philosophy of science as a compulsory subject, providing of knowledge relevant current level of development of the discipline and state educational standards of higher education Ministry of Education and Science of Ukraine.</p> <p>A study of discipline a student must know concepts and categories of the philosophy of science; object, method, function and philosophy of science; features and key aspects of epistemology and epistemology, methodology, logic.</p>
Civil Protection	<p>Course objective is to develop in students the ability to think creatively, solve complex problems innovative character and make productive decisions in the field of civil protection, allowing for the future careers of graduates and scientific and technical progress.</p> <p>The task involves mastering of new theories, methods and techniques of forecasting of emergency, building models of their development, assessing the risk and justification of a set of measures aimed at prevention of emergency protection of personnel, population, material and cultural values in terms of the National Assembly, localization and liquidation of their consequences .</p>
Psychology of Higher School	<p>The aim of the course is to provide general theoretical training in psychology graduate high school, which will serve as the basis for their practical work related to teaching.</p> <p>Objectives of the discipline:</p> <ul style="list-style-type: none"> <li>- Mastering knowledge of the psychological characteristics of students' period of life;</li> </ul>

	<ul style="list-style-type: none"> <li>- Awareness of patterns of professional development and personal growth of future professionals;</li> <li>- Studying the psychological aspects of training and education of students;</li> <li>- Awareness of the psychological characteristics of scientific and educational activities and ways of mastering;</li> <li>- Promote professional and self-determination of students' vocational teacher identity;</li> <li>- The development of personal qualities that are important for professional teaching.</li> </ul>
<p>Methodology and organization of scientific research</p>	<p>The aim of the course is to familiarize students with relevant concepts, systems and algorithms and the foundations of scientific research and providing practical recommendations of scientific publications; the implementation and execution of projects and theses.</p> <p>Course tasks:</p> <ol style="list-style-type: none"> <li>1. Introducing students <ul style="list-style-type: none"> <li>- To the principles of scientific research in Ukraine;</li> <li>- With features selecting areas of research and definition phases of research;</li> <li>- Principles of information support for research;</li> <li>- The methods of theoretical and experimental studies;</li> <li>- With design features the results of scientific work; forming practical skills of rational organization of scientific work;</li> <li>- With features test the results of scientific work, develop their skills of public protection.</li> </ul> </li> <li>2. Mastering the students modern methodology of scientific research.</li> <li>3. Encourage students to research activities.</li> <li>4. Formation of active, creative, highly skilled professionals.</li> </ol>
<p>Design, simulation and parameterization of tests</p>	<p>The course provides the theoretical and practical training in technology of treatment of the tests results. The aim of this course is to develop the masters knowledge , abilities ,and practical skills which are necessary for the analysis and estimation the results of testing particularly in determination of the reliability and validity of the test, the estimation of latent parameters and accuracy of parameters , the scale of the results of educational measurement.</p> <p>Having studied the course masters can apply the methods of dispersion, correlative and factor analysis during the modeling and improvement of the tests.</p> <p>In particular the course is aimed to generalize, systematize and master the theoretical knowledge in the calculus of probabilities and mathematical statistics, acquaintance with basic mathematical statistics methods of treatment the results of testing and other kinds of control the - mastering of learning the material.</p> <p>The course realizes the preparation concerning the theory and practice of pedagogical measurement as for the using of the tests. Also, the course is aimed to acquaint the students with modem state and tendency of the theory and practice of testing, the study of the specific character of making of the tests, create the methodical provision of the test, the working out of the methods of approbation of testing and its organization, treatment and interpretation of tests results.</p>

Pedagogical evaluation and monitoring of the quality of education	The subject of study of the discipline is to study the system of evaluation of educational achievements of students and quality of education in general. Within the course general theoretical and historical aspects of evaluation, teacher evaluation and monitoring of the quality of education being considered; principles, methods and types of assessment in the general and higher education are analyzed; international standards and regulations governing the evaluation of educational activities are studied; current state and trends of rating systems around the world are studied; current program and results of national and international comparative studies of the quality of education is studied. In the course students learn to plan monitoring research, develop tools, collect, process, analyze and interpret the results.
Computer technology in testing	The aim of the course is to provide professional training of masters using computer technology, conducting and processing the results of test studies. The future masters will get abilities and skills to work with a wide range of software products for testing, will be capable of using virtual educational environment and will have a thorough knowledge of modern computer technology in testing.

### **Short descriptions of courses in specialisation 'Gender Studies'**

#### **Survey Sampling in Psychology, Sociology and Pedagogics**

The objectives of this course are to teach basic ideas of sampling from an applied perspective. The course will cover the main techniques used in actual sampling practice — simple random sampling, stratification, systematic selection, cluster sampling, multistage sampling, and unequal selection probability. The course will also cover sampling frames, cost models, sampling error estimation techniques, non-sampling errors and compensation for missing data.

This course is designed for students interested in understanding survey sampling methods and applying them in practice. Introductory course work in applied statistical methods (at least one and possibly two semesters of basic statistics) is strongly recommended. However, the emphasis will be on understanding the concepts and the implications of derivations rather than the derivations themselves and using sampling in the gender research.

#### **Foundations in Gender Studies**

The course of «The Fundamentals of Gender Studies» aims to holistically and systematically give the common patterns of origin and development of Gender Studies as a new interdisciplinary, integrative direction of Modern Social knowledge. The historiographical array of philosophical, social, economic, political, legal and journalistic literature on gender issues is considered possible to be divided into several parts, given the structure of the developed course.

First, the individual works of foreign authors in which are revealed the basic regulations of the theory and history of gender, examined the development of the feminist movement and the formation of the main directions of modern feminism.

In the course of «Fundamentals of Gender Studies» students will be offered a series of tasks, implementation of which will facilitate the assimilation of the basic concepts of gender studies; will develop the skills for using the methodological and basic principles of gender studies to analyze the socio-economic phenomena and processes; will help to single out, compare and summarize the factors of gender stratification and carry out the analysis of gender information. For example, to conduct a gender audit in the Volodymyr Vynnychenko state pedagogical university; make a gender portrait of the University based on the indicators of gender sensitivity; conduct gender expertise of educational plans of certain professions; determine the level of gender sensitivity of the faculty of Physics and Mathematics according to the specific parameters. There will be also a gender analysis of the content of school textbooks on economics (I.F. Radionova and the team of authors led by L.P. Krupska) and the textbook «Financial Literacy» (ed. T.S. Smovzhenko).

### **Statistical indicators of Gender Equality**

The mathematical methods of statistics are widely used in order to evaluate the indicators of the gender equality. Such area of the usage of the mathematical statistics can be defined by the concept as gender statistics. Gender statistics is such an area which lies on the crossroad of the traditional spheres of statistical data, that reflects the life of men and women, which is directly connected with proper political questions. Gender statistics should reflect the participation and investments of men and women in all spheres of social-economical life, as well as real matters and results of the gender inequality. Statistical data of the gender equality are necessary to the development and monitoring of the politics, planned actions, and observation of the tendency in the sphere of the gender equality and to inform the society.

### **Quantitative Methods the Behavioural Sciences**

The aim of the course "Quantitative Methods in Behavioral Sciences" is to ensure professionals in the field of modern theory and practice of educational measurement, mathematical-statistical instrument for the analysis of research data in the Behavioral Sciences. The aim of the discipline studying: to familiarize students with the fundamentals of measurement theory, and the typology of measurement scales and basic traditional methods of quantitative analyses of empirical sociological research, etc., to introduce the methodological and procedural aspects of building quantitative models of socio-economic, political and other phenomena, to show how to use them to explain the status and development of social processes. Students must learn nonparametric techniques of statistical hypothesis testing and criteria of the differences, to establish the dependance between the various gender phenomena in the sample, use the results of research to scientific and practical conclusions. The course involves the use of computer mathematical and statistical packages that make possible to perform various types of analysis, verification criteria, data visualization, etc in short terms and effectively. in the course of the study.