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**FEDERAL STATE AUTONOMOUS EDUCATIONAL INSTITUTION OF HIGHER
EDUCATION PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA NAMED
AFTERPATRICE LUMUMBA
RUDN UNIVERSITY**

Faculty of Economics

COURSE SYLLABUS

ECONOMETRICS

**Recommended by the Didactic Council for the Education Field of
38.03.01 Economics**

(code and name of the direction of training/specialty)

**The course instruction is implemented within the professional education programme of
higher education**

International Economic Relations

(name (profile/specialization))

1. COURSE GOALS

The goal of mastering the discipline "Econometrics" is to gain knowledge and develop skills in the meaningful application of econometric analysis methods to solve problems of professional activity.

As a result of studying the discipline, the student must:

To know:

- Basic concepts, categories and tools of econometrics;
- methods of constructing econometric models describing economic objects and processes;
- methods for assessing the quality of constructed models

Can:

- apply methods of econometric analysis and modeling to solve economic problems;
- analyze in interrelation economic phenomena and processes at the micro and macro levels;
- use sources of economic, social, managerial information;
- analyze and interpret the data of domestic and foreign statistics on socio-economic processes and phenomena, identify trends in changes in socio-economic indicators;
- build standard econometric models based on the description of situations, analyze and meaningfully interpret the results obtained;
- to predict, on the basis of standard econometric models, the behavior of economic agents, the development of economic processes and phenomena at the micro and macro levels;

Possess:

- modern methods of collection, processing and analysis of economic data;
- methods for assessing the parameters of econometric models;
- methods and techniques for analyzing economic phenomena and processes using standard theoretical and econometric models;
- skills of independent work.

2. LEARNING OUTCOMES

Studying the discipline "Econometrics" is aimed at the formation of the following competencies (part of competencies) among students:

Table 2.1. List of competencies formed in students when studying the discipline (results of mastering the discipline)

Competence code	Competence	Competence indicators
GC-12	Able to: search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data received from various sources in order to effectively use the information received to solve problems; evaluate	GC-12.1. Know how to search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data received from various sources in order to effectively use the information received to solve problems
		GC-12.2. Able to evaluate information, its reliability, build logical conclusions based on incoming information and data

Competence code	Competence	Competence indicators
	information, its reliability, build logical conclusions based on incoming information and data	
GPC-2	Able to collect, process and statistically analyze the data necessary to solve the set economic problems	GPC-2.1. Able to manage methods and means of collecting, processing and analyzing information necessary to solve standard tasks of a technical and economic assessment of activities in the field of professional activity
		GPC-2.2. Able to manage methods and means of collecting, processing and analyzing information necessary to solve standard tasks of a technical and economic assessment of activities in the field of professional activity

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The discipline "Econometrics" refers to the part formed by the participants of the educational relations of block B1 of the EP.

Within the framework of the EP, students also master other disciplines and / or practices that contribute to the achievement of the planned results of mastering the discipline "Econometrics".

Table 3.1. List of Higher Education Programme components / disciplines that contribute to expected learning/training outcomes

Code	Competence	Previous disciplines/modules, practices*	Subsequent disciplines/modules, practices*
GC-12	Able to: search for the necessary sources of information and data, perceive, analyze, memorize and transmit information using digital means, as well as using algorithms when working with data received from various sources in order to effectively use the information received to solve problems; evaluate information, its reliability, build logical conclusions based on incoming information and data	Introduction to the Digitalization of Business Process Accounting Public Presentation Skills and Technologies Data Storytelling Basics of trading in the stock market Fundamentals of scientific research Training: working with international statistics Insurance business Modern financial transactions Digital technologies in management Fundamentals of Financial Forecasting Design Thinking Business on the Internet Digital Banking	Practice

Code	Competence	Previous disciplines/modules, practices*	Subsequent disciplines/modules, practices*
		The Economics of Digital Markets	
GPC-2	Able to collect, process and statistically analyze the data necessary to solve the set economic problems	Accounting, Statistics, Economic Geography, Economic and Mathematical Modeling Public Presentation Skills and Technologies Basics of trading in the stock market Financial analytics in Excel Fundamentals of scientific research Fundamentals of International Accounting and Auditing Standards Cities in the global economy Design Thinking Big Data: Basics of Data Analysis	Taxes and taxation Practice

4. COURSE WORKLOAD AND LEARNING ACTIVITIES

The total laboriousness of the discipline "Econometrics" is 3 credit units.

TABLE 4.1. Types of academic activities during the period of the HE programme mastering

Type of educational work	TOTAL, academic hours	Semester			
		6			
<i>Contact academic hours</i>	56	56			
including:					
Lectures					
Lab work	56	56			
Seminars (workshops/tutorials)					
<i>Self-study (ies), academic hours</i>	34	34			
<i>Evaluation and assessment academic hours</i>	18	18			
Overall laboriousness of the discipline	<i>academic hours</i>	108	108		
	credit units	3	3		

5. COURSE MODULES AND CONTENTS

Table 5.1. The content of the discipline (module) by types of educational work.

Course Modules and Contents	Course Modules and Contents	Type of educational work *
Section 1. Simple regression	<p>Topic 1. Introduction</p> <p>The object and subject of the course "Econometrics". The making of econometrics. Features of the econometric method. Stages of econometric research. Types of econometric models and methods, data types. Examples of econometric models. The essence of correlation and regression analysis.</p>	LC
	<p>Topic 2. The method of least squares.</p> <p>Regression estimation methods, properties of sample estimates. The method of ordinary least squares (OLS) for determining the coefficients of the linear regression equation. Properties of OLS estimation. Analysis of variance. Coefficient of determination.</p>	LC, LR
	<p>Topic 3. Hypothesis testing</p> <p>Statistical tests to determine the quality of estimation of the regression equation and the significance of the regression coefficients. Confidence intervals.</p> <p>Interpretation of linear regression parameters. Forecasting based on the estimates obtained, the confidence interval for the forecast.</p>	LC, LR
	<p>Topic 4. Nonlinear regression models.</p> <p>Linearization methods. Examples of using nonlinear models. Interpretation of regression coefficients for nonlinear models.</p> <p>Demand function, the use of a linear and nonlinear relationship to model demand on income. Marginal propensity to consume and elasticity.</p>	LC, LR
Section 2. Multiple regression.	<p>Topic 5. Methods for constructing multiple regression.</p> <p>Model specification: selection of factors, selection of the type of equation. The least squares method for multiple regression. Statistical tests to determine the quality of assessment, unilateral and bilateral tests to determine regression coefficients. Compare models with different numbers of factors.</p>	LC, LR

Course Modules and Contents	Course Modules and Contents	Type of educational work *
	<p>Topic 6. Nonlinear models of multiple regression.</p> <p>Nonlinear models for the demand function. Cobb-Douglas production function</p>	LC, LR
Section 3. Problems of constructing multiple regression models and features of time series modeling	<p>Topic 7. Dummy variables</p> <p>Use of dummy variables to model dependencies on qualitative features. Types of models, interpretation of coefficients under dummy variables, dummy shift and slope variables.</p> <p>Use of dummy variables to model seasonal variations.</p> <p>Use multiple sets of dummy variables.</p> <p>Topic 8. Specification errors</p> <p>The problem of including unnecessary factors and not including significant factors. Use substitution variables.</p> <p>Topic 9. The problem of multicollinearity and heteroskedasticity in regression models.</p> <p>Topic 10. Features of time series modeling. Trend models. Seasonal fluctuations. The problem of autocorrelation, the Darbin-Watson test. Methods of eliminating autocorrelation.</p>	LC, LR
Section 4. Systems of econometric equations	<p>Topic 11. Types of system equations</p> <p>A general concept of the systems of equations used in econometrics.</p> <p>Topic 12. Simultaneous equation systems</p> <p>Structural and reduced form of SDA. The problem of identification.</p> <p>Evaluation of structural form parameters.</p> <p>Application of econometric equation systems.</p>	LC

* - is filled only in the **full-time** form of training: LC - lectures; LR - laboratory work; SC - seminar classes

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Logistics of discipline

Name of special placements and placements for independent work	Equipment of special placements and placements for independent work	List of licensed software. Details of the confirming document
Lecture Hall	Auditorium for lecture-type classes, equipped with a set of specialized furniture; whiteboard (screen) and technical means of multimedia	Computer, multimedia projector, Internet access

Name of special placements and placements for independent work	Equipment of special placements and placements for independent work	List of licensed software. Details of the confirming document
	presentations.	
Computer Lab	Computer class for classes, group and individual consultations, current control and intermediate certification, equipped with personal computers (in the amount of 21 pieces), a whiteboard (screen) and technical means of multimedia presentations.	Personal computers with installed software (Excel, Eviews, R) and Internet access
For independent work of students	An auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to EIOS.	

1. RESOURCES RECOMMENDED FOR COURSE STUDY

7. Main reading(sources)

1. Dougherty, C. Introduction to Econometrics 5e, 2017.
<https://learninglink.oup.com/access/dougherty5e>
2. Matyushok V.M., Balashova S.A., Lazanyuk I.V. "Basics of econometric modeling using Eviews". – M.: izd-vo RUDN University, 2020 (e-book, access to RUDN University).
3. Jeffrey M. Wooldridge Introductory Econometrics: A Modern Approach 7th edition by, South-Western College Publishers (2018, 816pp)

Additional (optional) reading (sources)

Resources of the information and telecommunication network "Internet":

1. RUDN University EBS and third-party EBS, to which university students have access on the basis of concluded contracts:
 - ELECTRONIC LIBRARY SYSTEM RUDN University – EBS RUDN University
<http://lib.rudn.ru/MegaPro/Web>
 - EBS University Library Online <http://www.biblioclub.ru>
 - EBS Jurait <http://www.biblio-online.ru>
 - EBS Student Consultant www.studentlibrary.ru
 - EBS "Lan" <http://e.lanbook.com/>
 - EBS Troitsky Bridge
2. Databases and search engines:

- electronic fund of legal and normative-technical documentation of the <http://docs.cntd.ru/>
- Yandex search engine [https:// www.yandex.ru/](https://www.yandex.ru/)
- Google <https://www.google.ru/> search engine
- Abstract database SCOPUS [http:// www.elsevier.com/abstract/scopus/](http://www.elsevier.com/abstract/scopus/)
- [http:// www.gks.ru/](http://www.gks.ru/) – portal of the Federal State Statistics Service of the Russian Federation
- [http:// www.cbr.ru/](http://www.cbr.ru/) – portal of the Central Bank of the Russian Federation
- <http://data.worldbank.org/> - World Bank Database
- <https://ec.europa.eu/eurostat/data/database> - database of EU countries
- <https://www.imf.org/external/datamapper/datasets> - International Monetary Fund databases

Educational and methodical materials for independent work of students when mastering the discipline / module:*

1. A course of lectures on the discipline "Econometrics".
2. Laboratory workshop on the discipline "Econometrics"
3. Methodical instructions for the implementation and design of the course work "Econometrics" (for the PAME profile).

* - all educational and methodological materials for independent work of students are placed in accordance with the current procedure on the page of **the discipline in TUIS!**

8. ASSESSMENT TOOLKIT AND GRADING SYSTEM* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL UPON COURSE COMPLETION

Evaluation materials and a grading system* for assessing the level of formation of competencies (part of competencies) based on the results of mastering the discipline "Econometrics" are presented in the Appendix to this Course Syllabus of the discipline

DEVELOPERS:

Head of the EMM Department

position, educational department

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name and surname.

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 economic relations



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