

**1. Name.** Econometrics and simulation of dynamic processes

**2. Code.** 11131

**3. Type.** Professional optional

**4. Academic year.** 2018-2019

**5. Semester.** II

**6. Number of ECTS credits - 5.**

**7. Name of lecturer, scientific degree, position.**

Hurianova Lidiia Semenivna, Doctor of Economics, Professor, Head of Department of Economic Cybernetics

**8. Learning outcomes:**

the ability to apply dynamic econometric models to substantiate hypotheses regarding the patterns of the dynamics of economic systems development, the assessment of system stability;

the ability to apply modern econometric methods and models for developing the most likely scenarios for the development of economic systems, predicting their reaction to the effect of "shocks" and management impacts, the formation of an effective economic policy;

the ability to carry out econometric analysis of structural changes in the economy, use panel data models to develop spatial and temporal forecasts, study the effects of interregional interaction, spatial clusterization.

**9. Compulsory previous academic courses.**

Higher mathematics, probability theory and mathematical statistics, econometrics, forecasting of socio-economic processes, mathematical methods, models and information technologies in scientific research.

**10. Contents.**

Econometric model, its types. Stages of construction of econometric models. Regression of quantitative and qualitative variables. Means of communication. The essence of fictitious variables. Features of the specification model with fictitious variables. Fictitious shift variable. Fictitious tilt variable. Spline functions. Models of binary selection. Probit and logit models. Patterns of cut samples. Models of censored samples. Estimation of model parameters with limited dependent variables. Features of modeling using panel data models. Methods of "multiplication of samples". Methods of processing statistical data in the conditions of small samples. Adaptive combined models. Trigg method. Trigg-Lich method. Chow method. Fundamentals of Economic Systems Simulation Using VAR-Models. Concept of error correction and cointegration model. Error correction mechanism and cointegration. ARCH and GARCH models. GARCH Exponential Model. Model GARCH-M. Estimation of models. Model Quality Criteria.

**11. Recommended literature:**

1. Borovikov V. P. STATISTICA Statisticheskij analiz i obrabotka dannyh v srede WINDOWS / V. P. Borovikov, I. P. Borovikov. – M.: Informacionno-izdatelskij dom "Filin", 1997. – 608 s.

2. Borovikov V. P. STATISTICA: iskusstvo analiza dannyh na kompyutere. Dlya professionalov / V. P. Borovikov, – SPb. : Piter, 2001. – 656 s.

3. Heiets V. M. Modeli i metodysotsialno-ekonomichnohoprohnouzuvannia: Pidruchnyk / Heiets V. M., Klebanova T. S., Cherniak O. I., Ivanov V. V., Dubrovina N. A., Stavytskyi A. V. – Kh.: VD “INZhEK”, 2005. – 396s.
4. Hurianova L.S., Klebanova T.S., Serhiienko O.A., Prokopovych S.V. Ekonometryka. Navchalnyi posibnyk -Kharkiv: Vyd. KhNEU im. S. Kuznetsia, 2015. – 389 s.
5. Klebanova T.S., Kurzenev V.A., Naumov V. M., Hurianova L.S. ta in. Prohnouzuvannia sotsialno-ekonomichnykhprotsesiv. Navchalnyi posibnyk - Vyd. KhNEU im. S. Kuznetsia, 2015. – 656 s.
6. Lukashin Yu.P. Adaptivnye metody kratkosrochnogo prognozirovaniya vremennykh ryadov. – M.: Finansy i statistika, 2003. – 416s.
7. Luk’yanenko I.H., Horodnichenko Yu.O. Suchasni ekonometrychni metody u finansakh. Navchalnyi posibnyk. – K.: Litera LTD, 2002. – 352s.
8. Magnus Ya. R. Ekonometrika. / Ya. R. Magnus, P. K. Katyshev, A. A. Pereseckij. – M.: Delo, 2007. – 504 s.
9. Uotshem T.Dzh., Parramou K. Kolichestvennye metody v finansah: Ucheb. posobie dlya vuzov / Per. s angl. Pod red. Efimovoj M.R. – M.: Finansy, YuNITI, 1999. – 527s.

#### **12. Methods of teaching.**

Lectures, laboratory lessons, problem-oriented lectures, work in small groups, computer simulation, presentations.

#### **13. Assessment methods:**

- current control (active work at lectures, active participation in the implementation of laboratory tasks, tests, performing an individual research project);
- modular control (complex test);
- final control (credit test).

#### **14. Language of teaching.** Ukrainian