# STUDY MODULE DESCRIPTION FORM

| Name of the module/subject | Code |
|---|---|
| **Introduction to Econometrics** | **1011104261011130552** |

| Field of study | Profile of study (general academic, practical) | Year /Semester |
|---|---|---|
| **Logistics - Part-time studies - First-cycle** | **(brak)** | **3 / 6** |
| Elective path/specialty | Subject offered in: | Course (compulsory, elective) |
| **-** | **Polish** | **elective** |

| Cycle of study: | Form of study (full-time,part-time) |
|---|---|
| **First-cycle studies** | **part-time** |

| No. of hours | No. of credits |
|---|---|
| Lecture: **16** Classes: **-** Laboratory: **-** Project/seminars: **-** | **3** |

| Status of the course in the study program (Basic, major, other) | (university-wide, from another field) |
|---|---|
| **(brak)** | **(brak)** |

| Education areas and fields of science and art | ECTS distribution (number and %) |
|---|---|
| **technical sciences** | **3 100%** |
| **Technical sciences** | **3 100%** |

## Responsible for subject / lecturer:

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## Prerequisites in terms of knowledge, skills and social competencies:

| | | |
|---|---|---|
| 1 | **Knowledge** | Student knows economics terms and laws. |
| 2 | **Skills** | Student can use computer and Excel. |
| 3 | **Social competencies** | Student can work in a team to prepare a project. |

## Assumptions and objectives of the course:

C1 Aquiring knowledge about statistical methods of economics model estimation.

C2 Working out skills of estimation and verification of an economic model.

C3 Working out skills of interpretation of estimated economic parameters and and their usage in forecasting and simulating.

## Study outcomes and reference to the educational results for a field of study

### Knowledge:

1. Student knows Econometrics and its terms and typical economic models. - [K1A_W04]
2. Knows ordinary and generalised least squares methods (OLS, GLS). - [K1A_W04]
3. Knows linear and not-linear models. - [K1A_W04]
4. Knows problem of statistical significancy problem. - [K1A_W04]
5. Knows analytical and smoothing methods of estimation. - [K1A_W04]
6. Knows forecast thoery and its terms (forecast term, process and rules, error ex ante and ex post, accuracy) and applications in logistics . - [K1A_W26]

### Skills:

1. Student can explain an economic model and its parameters. - [K1A_U09]
2. Student can estimate and verify significancy of economic model with OLS and GLS method. - [K1A_U09]
3. Can estimate using Excel and GRETL software. - [K1A_U07]
4. Can assess statistical significancy and fitness of model to data. - [K1A_U15]
5. Can calculate a forecast or simulation and their errors ex ante and ex post. - [K1A_U05]
6. Understands and uses economic models and parameters. - [K1A_U05]

### Social competencies:

| |
|---|
| 1. Student is concious about role and meaning of economic parameters and models estimation. - [K1A_K01] |
| 2. Promotes forecasting in management.. - [K1A_K06] |
| 3. Is ready to work in forecasting team. - [K1A_K03] |

## Assessment methods of study outcomes

Forming mark:

a) on a basis of questions concerning worked over problems

Summary mark:

a) on a basis of written test of tasks solving (2 tasks with 10 points each and third task with 5 points). Pass requires 50% of all points.

## Course description

1. Econometrics and its basic terms. Econometric model and its terms.
2. Model estimation and verification with OLS method. Model function, ordinary least squares method (OLS) and its assumptions, determination coefficient R2, Statistical significancy test. Forecast and its error. Residuals series test.
3. Linear model with many determinants.
4. Forecast theory and terms. Forecast term, rule and error ex ante and ex post, accuracy.
5. Examination of autocorrelation and unity roots. Stationary series forecasting (average and autoregression) and non-stationary variance forecasting (naive method, moving average, exponential smoothing).
6. Trends. Linear and non-linear. Residuals autocorrelation.
7. Seasonality effects. Additive (mechanical and seasonal dummies method) and multiplicative (seasonality indices).
8. Case of revenue forecasting with software assistance.
9. Smoothing models with trends: Holt;s and Winters'.

## Basic bibliography:

1. Prognozowanie gospodarcze. Metody i zastosowania, Cieślak M. (red.), WN PWN, Warszawa 2002.
2. Gujarati D.N., Basic Econometrics, McGraw-Hill 2002.
3. Kufel T., Ekonometria. Rozwiązywanie problemów z wykorzystaniem programu GRETL WN PWN, Warszawa 2011.
4. Witkowska D., Podstawy ekonometrii i teorii prognozowania, Oficyna Ekonomiczna, Kraków 2006.

## Additional bibliography:

1. Borkowski B., Dudek H., Szczesny W., Ekonometria. Wybrane zagadnienia, Wydawnictwo Naukowe PWN, Warszawa 2004.
2. Dittmann P., Prognozowanie w przedsiębiorstwie, PWE, Warszawa 2003.
3. Kufel T., Ekonometryczna analiza cykliczności procesów gospodarczych o wysokiej częstotliwości obserwowania, WN UMK, Toruń 2010.

## Result of average student's workload

| Activity | Time (working hours) |
|---|---|
| 1. Lectures | 16 |
| 2. Consultations | 30 |
| 3. Student | 30 |

## Student's workload

| Source of workload | hours | ECTS |
|---|---|---|
| Total workload | 76 | 3 |
| Contact hours | 46 | 3 |
| Practical activities | 30 | 2 |