



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

prognozowanie gospodarcze (economic forecasting)

### Course

Field of study

Logistics

Area of study (specialization)

not applicable

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

III/VI

Profile of study

general academic

Course offered in

Polish

Requirements

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

16

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

Phd. Tomasz Brzęczek, Faculty of Engineering  
Management, 2 J.Rychlewski Str., room 331, tel.  
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Responsible for the course/lecturer:

### Prerequisites

Student knows basic statistics

### Course objective

To teach student a knowledge and skills of time series and data analysis, and how to use them in practice.



### Course-related learning outcomes

#### Knowledge

1. Student knows terms of forecast theory (forecast, error, feasibility and accuracy) and terms of econometric model, goodness of fit and significance [P6S\_WG\_04].
2. Knows ordinary and general least squares methods (OLS and GLS) of data analysis [P6S\_WG\_04].
3. Student knows trends and the types of time series fluctuations [P6S\_WG\_04].
4. Knows forecasting rules and forecast verification, and typical implementations in logistics. Knows how to calculate safety stock quantity to ensure given level of demand quantity satisfaction [P6S\_WK\_08].

#### Skills

1. Student can use econometric modeling and forecasts in logistics. Student matches a model to empirical data and logistics theory [P6S\_UO\_02; P6S\_UU\_01].
2. Can estimate a model using OLS and GLS methods also with usage of Excel and GRETL [P6S\_UW\_02].
3. Assess statistical significance and the fitness of model to data [P6S\_UW\_03].
4. Estimates error of forecast ex ante and ex post [P6S\_UO\_02].

#### Social competences

1. Student is conscious about forecasting role and meaning in logistics [P6S\_KO\_01-02].
2. Is ready to work in forecasting field projects and teams [P6S\_KR\_02].

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Forming mark is based on questions about already taught topics repetition.

Summary mark (pass) is based on written test with tasks and theoretical questions or topic presentation.

### Programme content

1. Forecasting theory. Terms, forecast, simulation, forecasting process, error, accuracy
2. Forecasting software. Functionality and examples
3. Analysis of time series and choice of an appropriate model
4. Stationary series forecasting: average, autoregression, seasonal fixed effects
5. Trends. Linear and non-linear. Residuals autocorrelation
6. Smoothing models: Brown's, Holt's and Winters'
7. Simulation of a level of stocks with a given level of demand satisfying



## Teaching methods

case study, tutorial, project elements

## Bibliography

### Basic

1. Cieślak M. (red.), Prognozowanie gospodarcze. Metody i zastosowania, WN PWN, Warszawa 2002.
2. Dittmann P., Prognozowanie w przedsiębiorstwie, PWE, Warszawa 2003.
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

1. Borkowski B., Dudek H., Szczesny W., Ekonometria. Wybrane zagadnienia, WN PWN, Warszawa 2004.
2. Brzęczek T., Ocena efektów dywersyfikacji portfela produktowego w zakresie ryzyka sprzedaży całkowitej i trafności jej prognoz, Ekonometria I (55) 2017, s. 112-124.
3. Kufel T., Ekonometryczna analiza cykliczności procesów gospodarczych o wysokiej częstotliwości obserwowania, WN UMK w Toruniu, Toruń 2010.

## Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	25	2,0
Student's own work (literature studies, preparation for tutorials, preparation for tests) <sup>1</sup>	50	1,0

<sup>1</sup> delete or add other activities as appropriate