

## UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	Ekonometrija
<b>Course title:</b>	Econometrics

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Fizika 2. st.		2	3
Physics 2 <sup>nd</sup> degree		2	3

**Vrsta predmeta / Course type** izbirni/ optional

**Univerzitetna koda predmeta / University course code:**  

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
45	0	15	0	0	90	5

**Nosilec predmeta / Lecturer:** Timotej Jagrič

<b>Jeziki / Languages:</b>	<b>Predavanja / Lectures:</b>	Slovenski/Slovene
	<b>Vaje / Tutorial:</b>	Slovenski/Slovene

**Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:**

Matematika

**Prerequisites:**

Mathematics

**Vsebina:**

Predmet podaja sistematičen pristop k ekonometrični teoriji in tehnikam, ki so uporabljene v okviru modelov z eno ali več enačbami. Poseben poudarek bo na modelih z eno enačbo, medtem ko bodo problemi vezani na modele z večimi enačbami le na kratko predstavljeni. Poudarek bo na zgoščnem, a kljub temu celostnem razumevanju statistične teorije, ki vključuje metode za analizo modelov z eno enačbo. Predmet bo pokrival formulacijo in oceno ekonometričnih modelov. Podani bodo praktični primeri na realnih podatkih z uporabo ustreznega programskega paketa. Osnovna poglavja so:

1. Uvod (Uvod v ekonometrijo, Ponovitev statistike);
2. Multipli regresijski model (Uvod, Ocena parametrov, Lastnosti, Testiranje hipotez, Mere primernosti, linearne transformacije, napovedovanje);
3. Neizpolnjevanje predpostavk (Specifikacija modela, Normalna porazdelitev, Multikolinearnost, Heteroskedastičnost, Avtokorelacija);

Dodatne teme (Slamnate spremenljivke, Odložene spremenljivke, Simultani sistemi).

**Content (Syllabus outline):**

The course provides a systematic approach to econometric theory and techniques associated with single and multiple equation models. The primary emphasis will be on single equation models with a brief introduction to problems associated with models containing multiple equations. The emphasis will be to provide an intuitive, yet rigorous, theoretical understanding of the statistical methods used to analyze such models. The course will cover the formulation and estimation of econometric models. There will be "hands on" experience using statistical software and actual data. The syllabus outline is:

1. Introduction (Introduction to Econometrics, Statistics Review);
2. The Multiple Regression Model (Introduction, Estimating the Parameters, Properties, Hypothesis Testing, Goodness of Fit, linear transformations, forecasting);
3. Violations of Assumptions (Model Specification, Multicollinearity, Heteroskedasticity, Serial Correlation);

Additional Topics (Dummy variables, Lagged variables, Simultaneous systems).

**Temeljni literatura in viri / Readings:**

1. T. Jagrič (2005). Ekonometrija – zapiski predavanj. EPF, Maribor.
2. N. Gujarati (2003). Basic Econometrics – Fourth Edition. McGraw-Hill, New York.
3. W. H. Green (2003). Econometric Analysis – Fifth Edition. Prentice Hall, New Jersey.
4. G. S. Maddala (2003). Introduction to Econometrics – Third Edition. John Wiley & Sons, New York.

#### **Cilji in kompetence:**

Študentje naj bi dobili osnovna znanja in spretnosti, ki so potrebna za ekonometrično analizo. Sposobni naj bi bili uporabiti znanja na analizi ekonomskih fenomenov, ter razumeti ekonometrične metode, pristope, ideje, rezultate in sklepe, ki jih zasledimo v knjigah in člankih iz področja ekonomije. V okviru predmeta se bodo študentje učili tradicionalne ekonometrične metode. Hkrati naj bi razumeli bistvene razlike med časovnimi vrstami in presečnimi podatki ter specifične ekonometrične probleme, na katere naletimo pri delu z izbranim tipom podatkov. Študentje naj bi dobili spretnosti, ki so potrebne za oblikovanje in razvoj enostavnih in multiplih regresijskih modelov. Obravnavane metode naj bi razumeli do te mere, da jih lahko uporabijo na realnih ekonomskih bazah podatkov z uporabo sodobnih ekonometričnih programov.

#### **Objectives and competences:**

The students should get the basic knowledge and skills of econometric analysis. They should be able to apply it to the investigation of economic processes, and also understand the econometric methods, approaches, ideas, results and conclusions met in the majority of economic books and articles. In the course the students should study traditional econometric methods. At the same time the students should understand essential differences between the time series and cross sections data and those specific econometric problems met in the work with these types of data. The students should get the skills of construction and development of simple and multiple regression models. The considered methods and models should be mastered practically on real economic data bases with modern econometric software.

#### **Predvideni študijski rezultati:**

- Znanje in razumevanje:
- poznavanje osnovnih matričnih operacij in njihova aplikacija v linearnih regresijskih modelih;
- razumevanje predpostavk, na katerih temeljijo linearni regresijski modeli, in posledic odstopanja modela od teh predpostavk;
- poznavanje nabora principov statističnega testiranja, ki ga lahko apliciramo na linearne regresijske modele;
- poznavanje uporabe računalniških programov za ocenjevanje in testiranje ekonometričnih modelov;
- interpretacija in komentiranje rezultatov;
- sposobnost prebiranja velikega dela literature s področja kvantitativnih ekonomskih analiz, ki temeljijo na ekonometriji.

#### **Prenesljive/ključne spretnosti in drugi atributi:**

- sposobnost analize in sinteze;
- sposobnost uporabe znanja v praksi;
- samostojno delo;
- ustna in pisna komunikacija;
- reševanje problemov;
- sposobnost prilagajanja novim razmeram;
- raziskovalne sposobnosti;
- sposobnost generiranja novih idej.

#### **Intended learning outcomes:**

- Knowledge and understanding:
- be familiar with basic matrix operations and their application to the linear regression model;
- understand the assumptions underlying use of the linear regression model and be aware of the implications for the model departures from these assumptions;
- understand a variety of statistical testing principles that can be applied to the linear regression model;
- use software in the estimation and testing of econometric models;
- interpret and discuss results;
- be able to access a significant portion of the quantitative econ. literature that uses econometrics.

#### **Transferable/Key Skills and other attributes:**

- capability for analysis and synthesis;
- capacity for applying knowledge in practice;
- autonomous work;
- oral and written communication;
- problem solving;
- capacity to adapt to new situations;
- research skills;
- capacity for generating new ideas.

#### **Metode poučevanja in učenja:**

1. predavanja (predavatelj bo podal študentom vsebino ključnih teorij in tehnik);
2. vodene vaje v računalniški učilnici (primeri modeliranja in razprava o domačih nalogah);
3. individualne konzultacije s predavateljem;
4. samostojno delo v računalniški učilnici, s

#### **Learning and teaching methods:**

1. lectures (lecturer will provide students with knowledge of the fundamental theories and techniques);
2. guided classes in computer room (sample modeling is done and the main problems of home assignments are discussed);

posebnim poudarkom na uporabi interneta (izdelava domačih nalog z uporabo Excela in Soriteca, delo z ekonomskimi bazami podatkov, učna gradiva na internetu, spletne predstavitve predavanj iz ekonometrije); 5. samostojni študij gradiva	3. teachers' consultations; 4. self study in computer room, in particular with the Internet (making home assignments using Excel and Soritec, work with economic data bases, study guides on the Internet, looking through sets of slides in Econometrics); 5. self study with literature
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<b>Načini ocenjevanja:</b>	Delež (v %) / Weight (in %)	<b>Assessment:</b>
sodelovanje pri predavanjih in vajah; pisni izpit	20% 80%	class participation; written examination

**Reference nosilca / Lecturer's references:**

JAGRIČ, Timotej, JAGRIČ, Vita. A comparison of growing cell structures neural networks and linear scoring models in the retail credit environment : a case of a small EU and EMU member country. *East. Europ. econ.*, nov-dec 2011, vol. 49, no. 6, str. 74-96, doi: [10.2753/EEE0012-8775490605](https://doi.org/10.2753/EEE0012-8775490605). [COBISS.SI-ID [10975772](#)]

JAGRIČ, Vita, KRAČUN, Davorin, JAGRIČ, Timotej. Does non-linearity matter in retail credit risk modeling?. *Finance úvěr*, 2011, vol. 61, no. 4, str. 384-402, tabele, graf. prik. [COBISS.SI-ID [10767900](#)]

ŽUNKO, Matjaž, BOKAL, Drago, JAGRIČ, Timotej. Testiranje modelov VaR v izjemnih okoliščinah. *IB rev. (Ljubl., Tisk. izd.)*. [Tiskana izd.], 2011, letn. 45, št. 3, str. 57-67, tabele, graf. prikazi. [COBISS.SI-ID [10777884](#)]

JAGRIČ, Timotej, BEKŮ, Jani. How good are the growth and inflation forecasts for Slovenia?. *Rom. J. Econ. Forecast.*, 2011, vol. 14, iss. 4, str. 47-67. [COBISS.SI-ID [10964508](#)]

ŽUNKO, Matjaž, JAGRIČ, Timotej. Raven razkrivanja z metodo tvegane vrednosti v slovenskih poslovnih bankah. *Banč. vestn.*, apr. 2012, letn. 61, št. 4, str. 42-46. [COBISS.SI-ID [10994460](#)]