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DESCRIPTION OF THE COURSE

GENERAL INFORMATION		
Course Holder	**dr. sc. Ivana Rukavina**	
The name of the college	**Applied econometrics - practicum**	
Study program	**Professional Graduate Study of Business Management - MBA**	
Status of the College	**Mandatory**	
Year	**2nd Year**	
Point value and method of teaching	**ECTS coefficient of student workload**	**6**
	Number of hours (P+V)	**14+42**

DESCRIPTION OF THE COURSE
1.1. *Objectives of the course*
The aim of the course Applied Econometrics is to expose students to a set of advanced statistical methods and research designs that are the basis of quality economic empirical papers. More precisely, within the course, students will be introduced to the methods that are the basis for testing causal relationships within economic and business processes. The methodological starting point of the course is a thorough understanding of the ordinary least squares method, as well as more advanced quasi-experimental methods such as instrumental variables, discontinuity regression, difference in differences and the method of synthetic controls. In addition to the theoretical part of the methodologies themselves, great emphasis in the course will be on the application of methods to real data. To this end, students will replicate existing research and conduct their own analyses, all in the R Open Statistical Program.
1.2. *Requirements for enrolment in the course*
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1.3. *Expected learning outcomes for the course*

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Students should be able to:

1. Evaluate the advantages and disadvantages of the learned methods
2. Evaluate the suitability of econometric methods within different contexts and relate them to knowledge from other courses
3. Evaluate the quality of other people's applications of econometric techniques
4. Create your own research questions that can be answered empirically
5. Create appropriate research designs that answer the questions posed
6. Create your own computer codes that implement econometric methods.

1.4. *Course content*

Introduction to the College

Causality, Potential Outcomes, and the Experimental Ideal

- The problem of determining causality from non-experimental data
- Formal framework for the analysis of causality - potential outcomes
- Experiment - theory and examples

Regression and causality

- Regression (OLS) is the best linear predictor.
- When a parameter in regression gives what we want - a causal effect?
- Conditional exogenousness and the Frisch-Waugh-Lowell theorem

Instrumental variables

- Classical interpretation with two identifying assumptions
- LATE (local average treatment effect) interpretation with four identifying assumptions
- Problems and additions, moving away from identification assumptions

Differences in differences (difference-in-differences)

- The basic 2x2 model.
- Differences in differences using average and linear regression
- Identification assumption of parallel trends

Synthetic Control Methods and Panel Introduction

- Evaluation and testing of hypotheses through the method of synthetic control

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Using the Longitudinal Dimension of Data through Fixed Effects Regression discontinuity (regression discontinuity) The relationship between discontinuity regression and the experimental ideal Identifying the assumption of local randomness Sharp and fuzzy discontinuity regression Application of all methods and tools in the open statistical program R.		
1.5. *Types of teaching (put X)*	☒ lectures ☐ seminars and workshops ☒ exercises ☐ Distance education ☐ Field Teaching	☒ Independent tasks ☐ Multimedia & Network ☐ laboratory ☐ Mentoring work ☐ Other_____

1.6. *Student obligations*

The obligations of students are prescribed in detail by the Statute, Study Regulations, and Student Obligations Guidelines. The key obligations of students are: ATTENDANCE AT CLASSES: students are obliged to attend classes, actively follow lectures and exercises, and participate constructively in classes, and in order to acquire the right to take the exam, it is necessary to attend classes in the percentages prescribed by the Study Regulations. For each student, their presence in class is recorded through the Infoeduka digital office system. The minimum obligations are:

- *Full-time students must attend at least 70% of the total number of classes to be eligible to sign.*
- *Part-time students need to attend at least 50% of the total number of classes to be eligible to sign.*

***PASSING EXAMS:** in order to achieve a positive grade in the subject, it is necessary to achieve at least 54 points in the subject, but also at least 50% of points for each learning outcome. The method of taking the exam is described in more detail in the item Assessment and evaluation of students' work during classes and at the final exam.*

**FINAL EXAM – a student who has not met the conditions for passing the exam during the continuous examination of knowledge (has achieved a total of at least 54 points in the course and has met the lower point threshold of adoption of each learning outcome, i.e. a minimum of 50% of the points of each learning outcome), may take the*

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learning outcomes of the course at the final exam.

WRITTEN EXAM: *the student is required to take a written exam that verifies the acquisition of advanced theoretical knowledge related to the applicability of econometric methods within different contexts, the ability to compare with other previously adopted statistical methods, to assess the advantages and disadvantages of the learned methods and the ability to connect with knowledge from other courses.*

PRACTICAL WORK: *the student is obliged to participate in solving individual and group practical tasks and exercises during classes that test the ability to assess the quality of other people's applications of econometric techniques and the skills of creating their own research questions, appropriate research designs that answer the questions posed and their own computer codes that implement econometric methods.*

**CONTINUOUS EXAMINATION: In order to make students progress more efficiently in class, continuous examinations are carried out (3 intermediate exams). In this way, students acquire smaller teaching units and master the subject material more easily.*

1.7. *Student Work Tracking (Add X to the appropriate tracking format)*

Attending classes	x	Teaching activity		Seminar paper		Experimental work	
Written exam	x	Oral exam		Essay		Research	
Project		Continuous Assessment*		Report		Practical work	x
Portfolio							

1.8. *Assessment and evaluation of students' work during classes and at the final exam*

Evaluation and evaluation of students' work during classes and at the final exam is carried out on the basis of the Regulations on Studying of the EFFECTUS University of Applied Sciences.

Allocation of points according to the forms of student work monitoring:

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	Attending classes	Written exam	Practical work	Altogether
I1		16		16
I2		16		16
I3			16	16
I4			16	16
I5			16	16
I6			16	16
OUT OF OUTCOME	4			4
ALTOGETHER	4	32	64	100

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Linking learning outcomes, teaching methods and knowledge assessment methods:

FORMS OF TRACKING	***NAME OF LEARNING OUTCOMES***	**TEACHING METHOD**	**KNOWLEDGE ASSESSMENT METHOD**	**Maximum number of points**
Written exam	*OUTCOME 1 Evaluate the advantages and disadvantages of the learned methods*	*lecture*	*Exam in the form of an essay on a given topic: essay-type questions are used to test the acquisition of advanced theoretical knowledge related to the applicability of econometric methods within different contexts, the ability to compare with other previously adopted statistical methods, to assess the advantages and disadvantages of learned methods and the ability to connect with knowledge from other courses.*	*32*
		Asking questions		
		discussion		
	OUTCOME 2 Evaluate the suitability of econometric methods within different contexts and relate them to knowledge from other courses	*lecture*		
		discussion		
		Open Questions		
Practical work	*OUTCOME 3 Evaluate the quality of other people's applications of econometric techniques*	*lecture*	*Individual problem tasks: which test the ability to assess the quality of other people's applications of econometric techniques.*	*16*
		Open Questions		
		Guided training		
	OUTCOME 4	*Guided training*	*Group practical tasks: group tasks test*	*48*

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	Create your own research questions that can be answered empirically	*Rehearsal and feedback*	*the ability to create one's own research questions, appropriate research designs that answer the questions asked, and one's own computer codes that implement econometric methods. In addition to the above, the ability to lead, coordinate, collaborate and perform the task in teams is also checked.*	
	OUTCOME 5 Create appropriate research designs that answer the questions posed	*Guided training*		
		Rehearsal and feedback		
	OUTCOME 6 Create your own computer codes that implement econometric methods	*Guided training*		
		Rehearsal and feedback		
Attending classes	*All outcomes*	*Lectures and exercises*	*Attendance records*	*4*
			TOTAL POINTS	***100***

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Type of student workload	*Student Load Hours*	*ECTS credits*
Attending contact classes	56	1,87
Field Trips/Visits Outside the College	0	0
Independent study/research	30	1,0
Out-of-classroom preparation and preparation of seminars/presentations	15	0,50
Work on an out-of-classroom project assignment	0	0
Independent preparation for exams and exam time	44	1,47
Consultation activities	15	0,50
Other	20	0,66
TOTAL ECTS credits	**180**	**6**

RATING:

In order to achieve a positive grade in the course, the student must cumulatively meet two conditions: achieve a total of at least 54 (fifty-four) points in the course and meet the lower point threshold for the adoption of each individual learning outcome, which is 50% of the total points of the learning outcomes.

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Grades are calculated based on the following distribution of points:

SCORE	*RATING*
0,00 – 53,90	*Insufficient (1)*
54,00 – 64,90	*Sufficient (2)*
65,00 – 79,90	*Good (3)*
80,00 – 89,90	*Very good (4)*
90.00 and more	*Excellent (5)*

Grading is carried out in a transparent manner by collecting points. The course is evaluated with 100.00 points (with the possibility of achieving an additional 8 points on the Challenge learning outcome).

CHALLENGE LEARNING OUTCOME - the student has the opportunity to earn an additional maximum of 8 points through the Challenge learning outcome; The student independently chooses one of the activities proposed in the first lesson, and has the opportunity to independently propose an activity with which he wants to increase the number of points and, with the consent of the course holder, achieves them according to the criteria of the course. Points for the Challenge learning outcome are not distributed according to the learning outcomes, but the number achieved makes an additional number of points to the total number of points achieved according to the learning outcomes.

Before taking the final written exam, each student must meet the prescribed conditions, which primarily means that they have attended the % of classes determined by the Study Regulations and that they have received an electronically encrypted permission to take the exam.

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1.9. *Required reading and number of copies in relation to the number of students currently attending classes in the course*		
Title	*Number of copies*	*Number of students*
Angrist, J. D., & Pischke, J. S. (2015). Mastering 'Metrics: The Path from Cause to Effect. Princeton University Press.	*5** **students receive compulsory literature in permanent ownership*	*60*

1.10. Supplementary literature

Cunningham, S. (2021). Causal Inference: The Mixtape, Yale University Press.
Angrist, J. D., & Pischke, J. S. (2008). Mostly harmless econometrics: An empiricist's companion. Princeton University Press.
Athey, S., & Imbens, G. W. (2017). The state of applied econometrics: Causality and policy evaluation. Journal of Economic Perspectives, 31(2), 3-32.
Imbens, G. W., & Wooldridge, J. M. (2009). Recent developments in the econometrics of program evaluation. Journal of Economic Literature, 47(1), 5-86.

1.11. Ways of quality monitoring that ensure the acquisition of output knowledge, skills and competencies

- *analysis of exam results, achieved results, level of understanding and knowledge during exercises, practical tasks and group work,*
- *conducting a survey among students,*
- *The evaluation of the teacher,*
- *achieved results and level of knowledge presented during the preparation and defense of the final thesis (students who choose a graduate thesis in this course),*
- *analysis of the Quality Centre's reports and*
- *Feedback from students who have already graduated and their employers on the usefulness of the content of this course in the performance of the work they do.*