ISM UNIVERSITY OF MANAGEMENT AND ECONOMICS

APPROVED BY
THE STUDY COMMISSION
Minutes No. 02-12-2026-15
as of 27th August 2026

ECONOMETRICS

Course code	ECO105
Compulsory in the programmes	*Economics and Data Analytics, Economics and Politics, Finance*
Level of studies	*Undergraduate*
Number of credits	*6 ECTS (48 in-class hours + 6 consultation hours + 4 exam hours, 104 individual work hours)*
Course coordinator (title and name)	*Dr. Aleksandr Christenko*
Prerequisites	*Statistical Data Analysis*
Language of instruction	*English*

THE AIM OF THE COURSE:

This is an introductory course on econometrics with an emphasis on its applications, focusing on cross-sectional data analysis. The course aims to introduce the main empirical methods of economic data analysis, both from a theoretical and a practical perspective. Students will learn how to conduct empirical studies as well as how to analyse and interpret results from other empirical work by learning how to build suitable econometric models using the R programming language. A large focus will be dedicated to understanding the strengths and limitations of empirical methods, including how to mitigate any encountered issues, as well as correctly interpreting results and drawing valid conclusions. The main topics covered include: data wrangling, regression analysis with a focus on Ordinary Least Squares (OLS) and cross-sectional data, identification and fixing of model issues, and building limited dependent variable models.

MAPPING OF COURSE LEVEL LEARNING OUTCOMES (OBJECTIVES) WITH DEGREE LEVEL LEARNING OBJECTIVES (See Annex), ASSESSMENT AND TEACHING METHODS

Course level learning outcomes (objectives)	Degree level learning objectives BSC	Assessment methods	Teaching methods
CLO1. Learn how to clean, transform, and prepare data for analysis, including how to deal with missing data.	ELO 1.1 ELO 1.2 ELO 3.1. ELO 3.2 ELO 4.3.	Midterm test, laboratory assignments	Lectures, laboratory work assignments, independent work
CLO2. Understand and apply basic concepts of data analysis, including descriptive statistics, sampling, estimation, and hypothesis testing.	ELO 1.1 ELO 1.2 ELO 3.1. ELO 3.2 ELO 4.3.	Midterm test, laboratory assignments, final exam	Lectures, laboratory work assignments, independent work
CLO3. Analyse and evaluate linear regression models: build econometric models and interpret them.	ELO 1.1 ELO 1.2 ELO 3.1. ELO 3.2 ELO 4.3.	Midterm test, laboratory assignments, final exam	Lectures, laboratory work assignments, independent work

Week	Topic	In-class hours	Readings
1.	The data generation process and introduction to the research design	4	McElreath Ch 1 Huntington-Klein Ch 1; 4.1 Llaudet and Imai Ch 1.
2.	Data wrangling in dealing with missing data	4	Huntington-Klein Ch 3; 4.1., 4.2., 4.3. Wooldridge Ch 9.5
3.	Simple regressions	4	Wooldridge Ch 2 Weisberg Ch 2 McElreath Ch 4
4.	Multiple regression estimation and analysis	4	Wooldridge Ch 3.1, 3.2, 4, 7.2, 7.3 Weisberg Ch 3
5.	OLS assumptions	4	Wooldridge Ch 3.5, 5
6.	Dealing with omitted and irrelevant variables, as well as outlier detection	4	Wooldridge Ch 3.3 Weisberg Ch 9.4, 9.5
7.	*Midterm exam*	2	
8.	Interaction term and finalising discussion on issues	4	McElreath Ch 7 Wooldridge 7.4
9.	Review of different functional forms	4	Wooldridge Ch 6.1, 6.2, 9.1 Weisberg Ch 5.3
10.	Overfitting, regularisation, and information criteria	4	McElreath Ch 6
11.	Limited dependent variable models I	4	Wooldridge Ch 7.5 Weisberg Ch 12.2
12.	Limited dependent variables models II	4	Wooldridge Ch 9.2, 9.3 (article) Papke and Wooldridge
13.	Course overview	4	
	Total hours	**48**	
	CONSULTATIONS	6	
	FINAL EXAM	2	

FINAL GRADE COMPOSITION

Assessment methods

Assignment	Final grade, %
Group Components	
Laboratory assignment 1	20%
Laboratory assignment 2	20%
Individual Components	
Midterm exam	30%
Final exam	30%
Total	100%

Midterm exam. The midterm will be based on topics 1-6. The midterm will be closed-book and will include true-false, multiple-choice, and open questions.

Final exam. The exam will be based on topics 8-12, as well as on some topics from the first half of the course. The exam will be closed-book and includes true-false, multiple-choice, and open questions. The final written examination will take place during the examination session.

Laboratory assignments. In the assignments, students will have to prepare reports of performed analyses following a framework provided by the instructor. To further check the students' understanding of what they created, during the first seminar after the first laboratory assignment, the course instructor will ask students to answer several questions about their outputs. Assignments have to be completed in a group of two or three students using the R programming language. The content of each assignment will be similar to computer exercises performed during the seminars.

The retake exam. After receiving a failing final cumulative grade, a student can retake the exams. A retake exam will consist of all course material and will constitute 60% of the final grade. Upon retaking, the results of the midterm and the final exams will be annulled. Laboratory assignments cannot be retaken at a later time, but their grades will be incorporated into the final grade.

AI Policy

Students may use AI tools to improve their efficiency, including getting recommendations on possible code, drafting comments explaining what different script elements do, or improving the quality of their written English, but not to do research for them. Students are also responsible for all work they submit for grading and must ensure it follows the assignment expectations. They must also have a thorough understanding of the script, including what it does and how it works, as well as of the outputs they produced, including what the results mean. In cases where the integrity of the work might be questioned, the course instructor reserves the right to ask the student to explain their outputs and/or the code face-to-face sometime after the submission deadline. If the student cannot answer the questions sufficiently well, the course instructor reserves the right to give a non-passing grade for the assignment.

Readings:

1. McElreath, R. (2020). *Statistical Rethinking: A Bayesian Course with Examples in R and STAN*. Chapman and Hall/CRC, New York, https://doi.org/10.1201/9780429029608
2. Weisberg, S. (2005). *Applied Linear Regression (3rd Edition)*. John Wiley & Sons, Inc., Hoboken. http://dx.doi.org/10.1002/0471704091
3. Wooldridge, J. M. (2013). *Introductory Econometrics: A Modern Approach (5th ed.).* Boston, MA: South-Western Cengage Learning.

Additional Readings:

1. Huntington-Klein, N. (2025). *The Effect: An Introduction to Research Design and Causality*. Chapman and Hall/CRC, New York.
2. Llaudet, E. and Imai, K. (2022). *Data analysis for social science: a friendly and practical introduction*. Princeton University Press, Princeton.
3. Papke, L.E. and Wooldridge, J.M. (1996), Econometric methods for fractional response variables with an application to 401(k) plan participation rates. J. *Appl. Econ*., 11: 619-632. https://doi.org/10.1002/(SICI)1099-1255(199611)11:6<619::AID-JAE418>3.0.CO;2-1.

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ANNEX

DEGREE LEVEL LEARNING OBJECTIVES

Learning objectives for the Bachelor of Business Management
Programmes:
International Business and Communication,
Business Management and Marketing, Finance,
Industrial Technology Management

Learning Goals	Learning Objectives
Students will be critical thinkers	BLO1.1. Students will be able to understand core concepts and methods in the business disciplines
	BLO1.2. Students will be able to conduct a contextual analysis to identify a problem associated with their discipline, to generate managerial options and propose viable solutions
Students will be socially responsible in their related discipline	BLO2.1. Students will be knowledgeable about ethics and social responsibility
Students will be technology agile	BLO3.1. Students will demonstrate proficiency in common business software packages
	BLO3.2. Students will be able to make decisions using appropriate IT tools
Students will be effective communicators	BLO4.1. Students will be able to communicate reasonably in different settings according to target audience tasks and situations
	BLO4.2. Students will be able to convey their ideas effectively through an oral presentation
	BLO4.3. Students will be able to convey their ideas effectively in a written paper

Learning objectives for the Bachelor of Social Science
Programmes:
Economics and Data Analytics,
Economics and Politics

Learning Goals	Learning Objectives
Students will be critical thinkers	ELO1.1. Students will be able to understand core concepts and methods in the key economics disciplines
	ELO1.2. Students will be able to identify underlying assumptions and logical consistency of causal statements
Students will have skills to employ economic thought for the common good	ELO2.1.Students will have a keen sense of ethical criteria for practical problem-solving
Students will be technology agile	ELO3.1. Students will demonstrate proficiency in common business software packages
	ELO3.2. Students will be able to make decisions using appropriate IT tools
Students will be effective communicators	ELO4.1.Students will be able to communicate reasonably in different settings according to target audience tasks and situations
	ELO4.2.Students will be able to convey their ideas effectively through an oral presentation
	ELO4.3. Students will be able to convey their ideas effectively in a written paper