



COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
Intelligent Information Systems	

Academic staff	Core academic unit(s)
Coordinating: Dr. Milda Aleknonytė-Resch Other:	Faculty of Economics and Business Administration

Study cycle	Type of the course unit
Second (Master)	Mandatory

Mode of delivery	Semester or period when it is delivered	Language of instruction
Hybrid (in person and remotely)	Spring semester	English

Requisites	
Prerequisites: Basic knowledge of statistics and calculus	Co-requisites (if relevant):

Number of ECTS credits allocated	Student's workload (total)	Contact hours	Individual work
5	130	32	98

Purpose of the course unit		
1. Subject specific competences: - Will acquire knowledge of the core concepts, methods, and application areas of intelligent information systems. - Will be able to apply data processing, knowledge representation, and intelligent analysis methods. - Will be able to evaluate the capabilities, performance, usefulness, and practical applicability of intelligent information systems using analytical approaches. 2. General competences: - Will develop skills of critical thinking and analytical discussion. - Will be able to present, interpret and justify results in a clear and understandable manner.		
Learning outcomes of the course unit	Teaching and learning methods	Assessment methods
Will understand the theoretical and methodological foundations of intelligent information systems.	Lectures: presentation of theoretical material, analysis of practical examples, discussions.	Final examination.
Will be able to apply methods and approaches of intelligent information systems for the analysis and solution of practical problems.	Seminars: discussions, use cases, project and written assignment preparation as well as presentation.	Assessment of project work and written assignment.
Will be able to evaluate the capabilities, predictive performance, and practical applicability of intelligent information systems using analytical and validation approaches.	Seminars: discussions, use cases, project and written assignment preparation as well as presentation.	Assessment of project work and written assignment.

Content	Contact hours							Individual work: time and assignments	
	Lectures	Tutorials	Seminars	Workshops	Laboratory work	Internship	Contact hours, total	Individual work	Tasks for individual work
1. Introduction to intelligent information systems (IIS): core concepts, scope, system types, and application domains.	2		2				4	6	Literature analysis, participation in discussions
2. Design Science Research for IIS: artifact design, research process, and evaluation logic.	2		2				4	10	Literature analysis, participation in discussions
3. Data foundations: data types, quality issues, preprocessing principles, and data preparation for analytics.	2		2				4	12	Literature analysis, participation in discussions, preparation of project
4. Types of analytics: descriptive, diagnostic, predictive, and prescriptive analytics, their roles, differences, and application contexts.	2		2				4	14	Literature analysis, participation in discussions, preparation of project
5. Predictive analytics: pattern recognition, machine learning, forecasting.	2		2				4	16	Literature analysis, participation in discussions, preparation of project and assignment
6. Evaluation and explainability: validation strategies, performance assessment, interpretation, and trust.	2		2				4	16	Literature analysis, participation in discussions, preparation of project and assignment
7. Prescriptive analytics: optimization, simulation, decision-support systems.	2		2				4	12	Literature analysis, participation in discussions, preparation of project and assignment
8. Advanced artificial intelligence methods in IIS: neural networks, natural language processing.	2		2				4	12	Literature analysis, participation in discussions, preparation of project
Total	16		16				32	98	

Assessment strategy	Weight %	Deadline	Assessment criteria
Project	40%	According to schedule	Quality, coherence, and completeness of the project work; relevance of the selected topic to Intelligent Information Systems; ability to apply course concepts and methods; quality of analysis, results, and presentation, ability to ask meaningful questions.
Assignment	30%	According to schedule	Quality of the submitted written work, including clarity of structure, formulation of the problem, use of relevant literature and sources, argumentation, methodological soundness, and presentation of results or conclusions.
Final exam	30%	During the exam period	Quality of answers to questions based on the course material. Assessment focuses on understanding of the main concepts, methods, and applications of Intelligent Information Systems, as well as the ability to give sensible examples, analyze and apply them.

Midterm tests (optional)		According to schedule	Quality of answers to open-ended and closed-ended questions based on the course material. Each test adds 0.5 points to the final grade if all questions in the test are answered correctly.
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Author (-s)	Publishing year	Title	Issue of a periodical or volume of a publication	Publishing house or web link
Required reading				
Ian H. Witten, Eibe Frank, Mark A. Hall, Christopher J. Pal	2016	Data Mining: Practical Machine Learning Tools and Techniques	Fourth Edition	Morgan Kaufmann
Jan vom Brocke, Alan Hevner, Alexander Maedche (Editors)	2020	Design Science Research. Cases		Springer, https://www.researchgate.net/profile/Jan-Vom-Brocke/publication/345403082_Design_Science_Research_Cases/links/68e232a8220a341aa152d7c1/Design-Science-Research-Cases.pdf
Recommended reading				
Stuart J. Russell, Peter Norvig	2021	Artificial Intelligence: a modern approach	Fourth Edition, Global Edition	Pearson
Foster Provost, Tom Fawcett	2013	Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking	First Edition	O'Reilly Media