

## ELEMENTS OF ARTIFICIAL INTELLIGENCE

<b>Course code</b>	<i>IT106</i>
<b>Compulsory in the programmes</b>	<i>Entrepreneurship and innovation</i>
<b>Level of studies</b>	<i>Undergraduate</i>
<b>Number of credits and</b>	<i>6 ECTS (48 contact hours + 6 consultation hours, 106 individual work hours)</i>
<b>Course coordinator (title and name)</b>	<i>Paulius Rauba, Džiugas Petruškevičius</i>
<b>Prerequisites</b>	<i>None</i>
<b>Language of instruction</b>	<i>English</i>

### THE AIM OF THE COURSE:

*This course serves as an introduction to the burgeoning field of artificial intelligence (AI) with a specific emphasis on machine learning (ML), the groundbreaking technology driving most recent innovations in the area. As digital transformations persistently reshape societal and economic infrastructures, it is increasingly crucial to develop a core understanding of AI. Through this course, students will gain this essential knowledge, exploring integral aspects of AI systems, learning about potential applications, grasping the key elements of AI prototyping, and developing an insightful understanding of the transformative role these technologies will play in the future work landscape and society at large.*

*Despite its subject matter, this course is not technically oriented. There will be no in-depth exploration of the algorithms that underlie these technologies, nor will there be significant engagement with the mathematics that forms the backbone of the underlying technology. Instead, the primary aim of this course is to cultivate a broader understanding of why and how these technologies are developed, their foundational components, their applications, and the implications they have on business operations as well as the future of society.*

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

<b>Course level learning outcomes (objectives)</b>	<b>Degree level learning objectives (Number of LO)</b>	<b>Assessment methods</b>	<b>Teaching methods</b>
CLO1 To be able to define Artificial intelligence and provide a typology of AI.	BLO 1.1.	Final exam, in-class contributions	Reflection and discussions
CLO2 To be able to understand AI technologies and its application for digital business development and societal development.	BLO 1.1. BLO 1.2	Group task presentation	Lectures, Group project Discussions
CLO3 To be able to understand main AI principles and its working elements	BLO 1.1	Final exam, in-class contributions	Lectures Reflecting, and discussions
CLO4 To be able to analyze societal and company problems and identify AI technologies to tackle them.	BLO 4.1	Group task presentations, and in-class contributions	Group project, prototyping concept development

CLO5. Will be able to understand ethical considerations, bias, and the importance of regulation in the context of AI.	BLO 2.1	Final exam. Group task presentations	Individual study Practicing, reflecting, and discussions
CLO6. Develop critical thinking ability and problem-solving skills through experiential learning.	BLO 4.2	Group-task presentation	Lectures, seminars, group project

### ACADEMIC HONESTY AND INTEGRITY

The ISM University of Management and Economics Code of Ethics, including cheating and plagiarism are fully applicable and will be strictly enforced in the course. Academic dishonesty, and cheating can and will lead to a report to the ISM Committee of Ethics. With regard to remote learning, ISM remind students that they are expected to adhere and maintain the same academic honesty and integrity that they would in a classroom setting

### COURSE OUTLINE

Topic	In-class hours	Readings
Definition of AI and ML technologies. ML Typology: supervised, unsupervised, semi-supervised, self-supervised, reinforcement learning.	4	
Deep learning systems: key algorithms for each data modality, compute and data requirements.	4	
Applications and use cases of AI technologies.	4	
Prototyping with AI.	4	
Economics of AI.	4	
The Future of AI: Opportunities, regulation, privacy, ethics.	4	
<u>Midterm exam (1-6)</u>		
Introduction to Power Virtual Agents: building, testing, and deploying simple chatbot.	4	
Enhancing Power Virtual Agents bots: using Power Automate to add actions; managing topics.	4	
Automating processes: Power Automate concepts, business processes automation.	4	
Building an advanced automated solution.	4	
Exploring low-coding solutions & databases: dataverse concepts, data storing solutions, basic app user interface development.	4	
Mixed reality integration into application: adding 3D environment tools.	4	
	<b>Total: 48 hours</b>	

CONSULTATIONS	6	
FINAL EXAM	2	

### FINAL GRADE COMPOSITION

Type of assignment	%
<i>Group Components 30%</i>	
Group project I (1-6 topics)	15
Group project II (7-12 topics)	15
<i>Individual Components 70%</i>	
Midterm exam (1-6 topics)	35
Final exam (7-12 topics)	35
<b>Total:</b>	<b>100</b>

### DESCRIPTION AND GRADING CRITERIA OF EACH ASSIGNMENT

*(Provide short descriptions and grading criteria of each assignment)*

1. **The Midterm exam** will count for 35% of the final grade. It may consist of essay questions or multiple choice questions that will be based on the material presented in classes, seminars, and required readings for topics 1-6. Students are expected to read the relevant chapters of the assigned readings.
2. **The Final exam** will count for 35% of the final grade. It may consist of essay questions or multiple choice questions that will be based on the material presented in classes, seminars, and required readings for topics 7-12. Students are expected to read the relevant chapters of the assigned readings.
3. **The group project presentation** will count for 30% of the final grade and will be splitted into 2 separate projects. More information on the group project will be presented by the lecturer during the first lecture, or before the course commences.

### RETAKE POLICY

If final (cumulative) mark of the course, including final exam score, is insufficient, students will be allowed to exercise their right of retake. The retake exam will cover all lectures and case-discussion topics discussed in class during the course. It will be held during the last week of the exam session and will replace the 70 % of exams (mid-term and final). Acquired scores from all assignments will be summed up and the final (cumulative) grade will be given. The lecturer reserves the right to choose the form of the exam (multiple choice/ open answer questions/ essay).

### REQUIRED READINGS

The required readings for each class will be provided by the lecturer.

#### Additional readings:

Iansiti, M., & Lakhani, K. R. (2020). Competing in the age of AI: strategy and leadership when algorithms and networks run the world. Harvard Business Press.

Agrawal, A., Gans, J., & Goldfarb, A. (2018). Prediction machines: the simple economics of artificial intelligence. Harvard Business Press.



Daugherty, P. R., & Wilson, H. J. (2018). Human+ machine: Reimagining work in the age of AI. Harvard Business Press.

Joseph Byrum. 2020. Leading the Intelligent Enterprise. MIT Sloan Management review. <https://sloanreview.mit.edu/article/leading-the-intelligent-enterprise/>

Joseph Byrum. 2021. Progress Toward the Intelligent Enterprise MIT Sloan Management review. <https://sloanreview.mit.edu/article/progress-toward-the-intelligent-enterprise/>

O'Neil, C. (2017). Weapons of math destruction. Penguin Books.

**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,  
Entrepreneurship and Innovation*

<b>Learning Goals</b>	<b>Learning Objectives</b>
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*

<b>Learning Goals</b>	<b>Learning Objectives</b>
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