Syllabus

1. Program information

1.1. Institution	ACADEMY OF ECONOMIC STUDIES
1.2. Faculty	Business Administration in Foreign Languages
1.3. Departments	Department of Business Administration in foreign languages (UNESCO chair)
1.4. Field of study	Business Administration
1.5. Cycle studies	Master Studies
1.6. Education type	Full-time
1.7. Program study	Digital Business and Innovation
1.8. Language study	English
1.9. Academic year	2020-2021

2. Course information

2.1. Name	**Machine Learning**								
2.2. Code									
2.3. Years of studies	**1**	2.4. Semester	**2**	2.5. Assessment type	**Exam**	2.6. Course type	**O (Mandatory)**	2.7. No. of ECTS	**6**
2.8. Leaders	Conf.univ.dr. ÎNTORSUREANU Iulian Costinel, iulian.intorsureanu@ie.ase.ro								

3. Total estimated time

3.1. Number of weeks	14.00		
3.2. Number of hours per week	4.00	of which	
		C (C)	2.00
		S (S)	2.00
3.3. Total hours from curriculum	56.00	of which	
		C (C)	28.00
		S (S)	28.00
3.4. Total hours of study per semester (ECTS*25)	150		
3.5. Total hours of individual	94		
Time distribution for individual study			
Study the textbook, course support, bibliography and notes	24		
Further reading in the library, on the online platforms and field	25		
Preparing seminars, labs, homework, portfolios and essays	42		
Tutoring	1		
Examinations	2		
Other activities	-		

4. Prerequisites

4.1. About curriculum	

4.2. About skills	

5. Requirements

for C(C)	The lectures will take place in rooms with teaching multimedia equipment and internet connection.
for S(S)	The seminars / Lab classes will take place in computer labs with teaching multimedia equipment and internet connection.

6. Skills covered

Professional	C4	Development of competences for the evaluation and usage of computer applications and technologies
	C6	Development of innovation skills and innovative use of information technology in the application of specific methods, techniques and tools for business administration

7. Course objective

7.1. General objective	Acquiring knowledge and abilities for configuring and using Machine Learning solutions for enterprises.
7.2. Specific objectives	- main approaches used in Machine Learning solutions - categories of ML algorithms and their properties / applicability to business problems - modeling practical problems in preparation for applying ML algorithms - using adequate software tools and techniques to configure, test and use ML-based solutions

8. Course contents

8.1. C(C)		Teaching methods	Advices
1	Machine Learning (ML): definitions and concepts.	Presentation, practical examples, case studies	
2	Machine Learning: application domains.	Presentation, practical examples, case studies	
3	Categories of ML algorithms (I): supervised and unsupervised learning, recommender systems, reinforcement learning, deep learning, neural networks	Presentation, practical examples, case studies	
4	Categories of ML algorithms (II): recommender systems, reinforcement learning, deep learning, neural networks	Presentation, practical examples, case studies	
5	Supervised learning algorithms. Modeling, configuration and implementing solutions for business problems	Presentation, practical examples, case studies	
6	Supervised learning algorithms. Implementing solutions for business problems (I)	Presentation, practical examples, case studies	
7	Supervised learning algorithms. Implementing solutions for business problems (II)	Presentation, practical examples, case studies	
8	Software applications / tools for implementing supervised learning solutions (I)	Presentation, practical examples, case studies	
9	Software applications / tools for implementing supervised	Presentation, practical	

	learning solutions (II)	examples, case studies	
10	Unsupervised learning algorithms. Modeling, configuration.	Presentation, practical examples, case studies	
11	Unsupervised learning algorithms. Implementing solutions for business problems (I)	Presentation, practical examples, case studies	
12	Unsupervised learning algorithms. Implementing solutions for business problems (I)	Presentation, practical examples, case studies	
13	Software applications / tools for implementing unsupervised learning solutions (I)	Presentation, practical examples, case studies	
14	Software applications / tools for implementing unsupervised learning solutions (II)	Presentation, practical examples, case studies	

Bibliography:

- Finlay, S., Artificial Intelligence and Machine Learning for Business, Relativistic, 2018
- Kelleher, J.D., Mac Namee, B., Fundamentals of Machine Learning for Predictive Data Analytics, MIT Press, 2015

8.2. S(S)		Teaching methods	Advices
1	Introduction: software applications / tools for Machine Learning (I)	Examples, practical exercicses	
2	Introduction: software applications / tools for Machine Learning (II)	Examples, practical exercicses	
3	The gradient descent method. Modeling, implementation.	Examples, practical exercicses	
4	The gradient descent method. Application / business case study.	Examples, practical exercicses	
5	The logistic regression method for classification problems. Modeling, implementation.	Examples, practical exercicses	
6	The logistic regression method for classification problems. Application / business case study.	Examples, practical exercicses	
7	Unsupervised learning: classification algorithms. Modeling, implementation.	Examples, practical exercicses	
8	Unsupervised learning: classification algorithms. Application / business case study.	Examples, practical exercicses	
9	Neural networks. Modeling and implementation.	Examples, practical exercicses	
10	Neural networks. Aplicație / studiu de caz economic.	Examples, practical exercicses	
11	Recommender systems. Case study	Examples, practical exercicses	
12	Deep learning. Case study (I)	Examples, practical exercicses	
13	Deep learning. Case study (II)	Examples, practical exercicses	
14	Individual project – presentation and defence		

Bibliography:

- Finlay, S., Artificial Intelligence and Machine Learning for Business, Relativistic, 2018
- Kelleher, J.D., Mac Namee, B., Fundamentals of Machine Learning for Predictive Data Analytics, MIT Press, 2015

9. Course contents corroboration with the demands of epistemic community representatives, professional associations and representative employers

The course content was correlated with local and international business requirements during various professional meetings and debates where the Lecturer took part.

10. Assessment

Activity	Assessment criteria	Assessment methods	Percentage in the final grade
10.1. S(S)	Preparation and active participation in lab classes	The participation frequency and degree of interaction during lab classes is evaluated	20%
10.2 C(C)	Elaboration of the individual project. The presentation of the project is a mandatory condition for participating in the exam.	The projects are evaluated according to the established requirements	30%
10.3. Final assessment	Written exam	The answers are evaluated according to an established evaluation scheme	50%
10.4. Grading scale	Whole notes 1-10		
10.5. Minimum performance standard	Knowledge and understanding of the presented concepts and terms; Practical abilities for using the presented software applications, which allow the complete performingof an average difficulty data processing flow.		

Completion date Instructors,

Approval of date of department, Director of department,