COURSE DESCRIPTION

1. Information about the programme

1.1 Institution of higher education	**Alexandru Ioan Cuza University of Iasi**
1.2 Faculty	**Faculty of Economics and Business Administration**
1.3 Department	**Department of Accounting, Information Systems and Statistics**
1.4 Field of study	**Business Informatics**
1.5 Level	**Master**
1.6 Study programme/ Qualification	**Software Development and Business Information Systems**

2. Information about the course

2.1 Course name			**Artificial Intelligence for Business**				
2.2 Course coordinator			Prof.**Daniel PĂVĂLOAIA,** PhD, Hab., Assoc.Prof.**Sabina NECULA**,PhD, Hab.				
2.3 Seminar coordinator			Assoc.Prof.**Sabina NECULA**,PhD, Hab.				
2.4 Year of study	**2**	**2.5** Semester	**3**	**2.6** Type of assessment	**M**	**2.7** Course status	**E**

** C – Compulsory / E - Elective*

3. Total estimated time (hours alloted to teaching activities per semester)

3.1 Number of hours per week	**3**	of which: **3.2** lecture	**2**	**3.3** seminar/lab	**1**
3.4 Number of hours in the curriculum	**42**	of which: **3.5** lecture	**28**	**3.6** seminar/lab	**14**

Time distribution	hrs
Study of the textbook, course book, bibliography and lecture notes	**30**
Additional research in the library, online and on the field	**15**
Preparation of seminars/labs, homework, projects, portfolios and essays	**40**
Tutorials	**15**
Assessment	**8**
Other activities	

3.7 Total number of self-study hours	**108**
3.8 Total number of hours per semester	**150**
3.9 Number of credits	**6**

4. Prerequisites (if applicable)

4.1 Curriculum-based	**Programming 2**
4.2 Competence-based	**General programming skills**

5. Conditions (if applicable)

5.1 For lectures	Lecture room should be provided with video projector
5.2 For seminars / labs	Computer lab with JDK1.8, Eclipse IDE and Drools

6. Specific competencies

Professional competencies	**C1.1 Knowledge about tools, techniques and methods of analysis, design, implementation and testing of business information systems – 2 credits**
Transversal competencies	**C2.2 Selection and refinement of the methods and techniques for data modeling, persistence, query and analysis, according to the nature of problems and available resources – 3 credits**

7. Course objectives (provided by the specific competencies grid)

7.1 . Main objective	The students will become familiar with the concept of Artificial intelligence and its wide applications in the business sector such as: Robotics, Neural networks, Intelligent systems, Genetic algorithm systems, Fuzzy systems and Semantic web.
. Specific objectives	On completion of the course, the students will be able: • to develop an intelligent systems in Eclipse using Drools • improve their programming skills in Java • to know the defining aspects of intelligent systems • to initiate themselves in intelligent systems prototyping

8. Content

8.1	**Lectures**	**Teaching methods**	**Observations (hours & readings)**

1.	1.Artificial intelligence and its domains	Interactive lecture(4h)	**Păvăloaia, V.D., Necula, S., Artificial Intelligence for Business, LAP LAMBERT Academic Publishing, 2020** Stuart Russell, Peter Norvig, Artificial Intelligence: A Modern Approach, Chpt 1, http://aima.cs.berkeley.edu/ Kevin Warwick , Artificial Intelligence: The Basics, 2011
2.	2. Artificial intelligence applications: characteristics, architecture and taxonomy 2.1. Intelligent systems (SE)	Interactive lecture(10h)	**Păvăloaia, V.D., Necula, S., Artificial Intelligence for Business, LAP LAMBERT Academic Publishing, 2020** J. C. Giarratano, Gary Riley. Expert Systems, Principles and Programming (4th ed.). Course Technology I.Andone, ş.a. Dezvoltarea Sistemelor Inteligente in Economie, Ed.Economica, Bucureşti 2001
3.	2.2. Neural systems 2.3. Deep learning 2.4. Genetic algorithm systems	Interactive lecture(10h)	**Păvăloaia, V.D., Necula, S., Artificial Intelligence for Business, LAP LAMBERT Academic Publishing, 2020** J. C. Giarratano, Gary Riley. Expert Systems, Principles and Programming (4th ed.). Course Technology Yusuke Sugomori et al., Deep Learning: Practical Neural Networks with Java, Packt 2017
4.	2.5. Fuzzy systems 2.6. Hybrid intelligent systems	Interactive lecture(10h)	J. C. Giarratano, Gary Riley. Expert Systems, Principles and Programming (4th ed.). Course Technology
5.	3. Semantic web and business applications	Interactive lecture(3h)	
6.	Theoretical examination	Evaluation(1h)	

Bibliography

Main readings:

Păvăloaia, V.D., Necula, S., Artificial Intelligence for Business, LAP LAMBERT Academic Publishing, 2020, ISBN 978-6203199475 , shorturl.at/rsZ09
J. C. Giarratano, Gary Riley. Expert Systems, Principles and Programming (4th ed.). Course Technology, 2004, ISBN 0-534-38447-1
S. Russell, P. Norvig. Artificial Intelligence: A Modern Approach (3rd ed.). Prentice Hall, 2010, ISBN 9780136042594
Yusuke Sugomori et al., Deep Learning: Practical Neural Networks with Java, Packt 2017
I.Andone, ş.a. Dezvoltarea Sistemelor Inteligente in Economie, Ed.Economica, Bucureşti 2001.

Additional readings:

Husac,G., Păvăloaia, V.D., Using Artificial Intelligence techniques to track unauthorized access: A case study for building a face recognition application, LAP LAMBERT Academic Publishing (September 15, 2022) shorturl.at/uyGS8
Jeff Heaton ,Artificial Intelligence for Humans, Volume 1: Fundamental Algorithms , 2013
Ian Millington, John Funge , Artificial Intelligence for Games, 2009

8.2	Seminars / Labs	Teaching methods	Observations (hours & readings)
1.	Introduction to Drools – 2h	Interactive classes	T0, T1
2.	The principles of developing business rules in Drools – 2h	Interactive classes	T0
3.	Practical example in Drools 1 – 2h	Interactive classes	T0
4.	Eval P1 – 2h	Interactive classes	T0
5.	Machine Learning - P2 (Phyton) – 2h	Interactive classes	T2
6.	Artificial Neural Network – P3 (Phyton) – 2h	Interactive classes	T2
7.	Project team evaluation – 2h	Evaluation	

Reference:

T0 M.Bali. Drools JBoss Rules 5.X Developer's Guide, Packt Publishing, 2013
T1 L.Amador. Drools Developer's Cookbook, Packt Publishing, 2012
T2 Raschka, S., 2015. Python machine learning. Packt Publishing Ltd.
Kaggle online courses
Lecture notes may be posted periodically on Blackboard Learn FEAA/Teams and/or FEAA Portal.

9. Corroboration of the course content with the expectations of community representatives, professional associations and representative employers from the programme's related field

The course content is correlated to that of similar courses taught at renowned universities and is continuously updated based on the feedback of students and alumni.
Moreover, this is a student-centered course that follows the best practices of learning and teaching in undergraduate education through the adoption of a variety of active-learning instructional methods.

10. Assessment

Type of activity	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in final grade (%)
10.4 Lectures		Theoretical Exam (Blackboard)	30%
10.5 Labs		Laboratory team project evaluation (P1,P2,P3)	70% (40%, 15%, 15%)
10.6 Minimum performance standard – A passing grade of 5.00, computed as presented below:			
70%* Laboratory team project evaluation + 30%*Theoretical Exam (Blackboard). The students enrolled for a team presentation, during course, may obtain an additional 20% from this grade.			

Date
01.09.2023

Course Coordinator
Prof.**Daniel PĂVĂLOAIA,**

Seminar Coordinator
PhD, Hab. Assoc.Prof.**Sabina NECULA**,PhD, Hab.

Head of Department

Date of approval
12.09.2023

Prof. Mircea ASANDULUI, PhD