[MNA101] Basics of Machine Learning

GENERAL INFORMATION

Studies	MASTER DEGREE IN DATA ANALYSIS, CYBERSECURITY AND CLOUD COMPUTING			**Subject**	Data Analysis
Semester	1	**Course**	1	**Mention / Field of specialisation**	
Character	COMPULSORY				
Plan	2024	**Modality**	Face-to-face	**Language**	CASTELLANO
Credits	3	**Hours/week**	0	**Total hours**	34 class hours + 41 non-class hours = **75 total hours**

PROFESSORS

AGUIRRE ORTUZAR, AITOR

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
STATISTICAL METHODS	*(No previous knowledge required)*

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
M2N101 - Know, understand and apply the basic fundamentals of machine learning.			*x*	2,4
M2N210 - Possess the learning skills that will enable them to continue studying in a largely self-directed or autonomous way.		*x*		0,6
			Total:	3

KC: Knowledge or Content / SK: Skills / AB: Abilities

SECONDARY LEARNING RESULTS

RA111 **Identifies and uses statistical and algebraic concepts in the field of machine learning.**

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	3 h.	6 h.	9 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	1 h.	2 h.	3 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	8 h.		8 h.
Carrying out exercises and solving problems individually and/or in teams	4 h.	11 h.	15 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	20%
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	5%
Individual written and/or oral tests or individual coding/programming tests	75%

MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

Individual written and/or oral tests or individual coding/programming tests

CH - Class hours: 16 h.
NCH - Non-class hours: 19 h.
TH - Total hours: 35 h.

RA112 **Is able to know and apply appropriate evaluation methods and metrics in machine learning, as well as to defend their choice within a group.**

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out	5 h.	13 h.	18 h.

individually and/or in teams			
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	3 h.	2 h.	5 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	5 h.		5 h.
Carrying out exercises and solving problems individually and/or in teams	5 h.	7 h.	12 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	20%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	15%	Individual written and/or oral tests or individual coding/programming tests
Individual written and/or oral tests or individual coding/programming tests	65%	

CH - Class hours: 18 h.
NCH - Non-class hours: 22 h.
TH - Total hours: 40 h.

CONTENTS

1. Introduction
2. Algebra and maths review
3. numpy bases
4. Data analysis process
5. Pandas
6. Statistics review
7. Exploratory data analysis
8. Metrics and evaluation method

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Subject notes	http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_lnk.pl?grupo=MASTERDATUANALISIA11&ejecuta=5&
Topic related web quires	
Technical articles	
Moodle Platform	
Labs	
Class presentations	
Computer practical training	