[MTB003] DEEP LEARNING

GENERAL INFORMATION

Studies	MASTER'S DEGREE IN ARTIFICIAL INTELLIGENCE			**Subject**	?
Semester	1	**Course**	1	**Mention / Field of specialisation**	
Character	COMPULSORY				
Plan	2024	**Modality**	Face-to-face	**Language**	CASTELLANO/ENGLISH
Credits	4,5	**Hours/week**	0	**Total hours**	45.5 class hours + 67 non-class hours = **112.5 total hours**

PROFESSORS

BIDAURRAZAGA BARRUETA, ARKAITZ

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	*(No previous knowledge required)*

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
M1T106 - Design, develop and implement an advanced data analysis process to respond to the nature of the data and the purpose of the task to be performed		x		3,9
M1T122 - Possess and understand knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context.		x		0,6
			Total:	**4,5**

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

SECONDARY LEARNING RESULTS

MIRA16 **[!]** ***Demostrar capacidad para integrar conocimientos y enfrentarse a la complejidad de formular juicios a partir de una información que, siendo incompleta o limitada, incluya reflexiones sobre los ODS, los derechos humanos y derechos fundamentales, y sobr***

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	5 h.	10 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	100%

MAKE-UP MECHANISMS

(No mechanisms)

CH - Class hours: 5 h.
NCH - Non-class hours: 10 h.
TH - Total hours: 15 h.

MIRA15 **[!]** ***Concebir y desplegar soluciones integrales de aprendizaje profundo para aplicaciones de distintos ámbitos***

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	3,5 h.	24 h.	27,5 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	4 h.		4 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	24 h.		24 h.
Carrying out exercises and solving problems individually and/or in teams	3 h.	21 h.	24 h.
Practical work in workshops and/or laboratories, individually and/or in teams	6 h.	12 h.	18 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	30%	Individual written and/or oral tests or individual coding/programming tests
Individual written and/or oral tests or individual coding/programming tests	70%	

CH - Class hours: 40,5 h.
NCH - Non-class hours: 57 h.
TH - Total hours: 97,5 h.

CONTENTS

Introduction to Deep Learning

Theoretical basis of Neural Networks

Neural Network optimisation methods

Convolutional Networks

Antagonistic Generative Networks

Transformers

RNNs

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Technical articles Moodle Platform	Bengio, Y., Goodfellow, I., & Courville, A. (2017). Deep learning (Vol. 1). Cambridge, MA, USA: MIT press. Raschka, S. (2024). Build a Large Language Model (From Scratch). Simon and Schuster.