



## Teaching Guide

Identifying Data					2022/23
Subject (*)	Knowledge and Reasoning under Uncertainty		Code	614544007	
Study programme	Máster Universitario en Intelixencia Artificial				
Descriptors					
Cycle	Period	Year	Type	Credits	
Official Master's Degree	2nd four-month period	First	Optional	3	
Language	English				
Teaching method	Face-to-face				
Prerequisites					
Department	Ciencias da Computación e Tecnoloxías da Información				
Coordinador	Moret Bonillo, Vicente		E-mail	vicente.moret@udc.es	
Lecturers	Cabalar Fernandez, Jose Pedro		E-mail	pedro.cabalar@udc.es	
	Moret Bonillo, Vicente			vicente.moret@udc.es	
Web					
General description					

## Study programme competences / results

Code	Study programme competences / results
A6	CE05 - Ability to design and develop intelligent systems through the application of inference algorithms, knowledge representation and automated planning
A7	CE06 - Ability to recognise those problems that require a distributed architecture, not predetermined during the system design, suitable for the implementation of multiagent systems
A8	CE07 - Ability to understand the consequences of the development of an explainable and interpretable intelligent system
A9	CE08 - Ability to design and develop secure intelligent systems, in terms of integrity, confidentiality and robustness
B1	CG01 - Maintaining and extending theoretical foundations to allow the introduction and exploitation of new and advanced technologies in the field of AI
B2	CG02 - Successfully addressing each and every stage of an AI project
B3	CG03 - Searching and selecting that useful information required to solve complex problems, with a confident handling of bibliographical sources in the field
B6	CB01 - Acquiring and understanding knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, frequently in a research context
B7	CB02 - The students will be able to apply the acquired knowledge and to use their capacity of solving problems in new or poorly explored environments inside wider (or multidisciplinary) contexts related to their field of study
B8	CB03 - The students will be able to integrate different pieces of knowledge, to face the complexity of formulating opinions (from information that may be incomplete or limited) and to include considerations about social and ethical responsibilities linked to the application of their knowledge and opinions
B9	CB04 - The students will be able to communicate their conclusions, their premises and their ultimate justifications, both to specialised and non-specialised audiences, using a clear style language, free from ambiguities
C2	CT02 - Command in understanding and expression, both in oral and written forms, of a foreign language
C3	CT03 - Use of the basic tools of Information and Communications Technology (ICT) required for the student's professional practice and learning along her life
C4	CT04 - Acquiring a personal development for practicing a citizenship under observation of the democratic culture, the human rights and the gender perspective
C5	CT05 - Understanding the importance of the entrepreneurial culture and knowledge of the resources within the entrepreneur person's means
C6	CT06 - Acquiring abilities for life and healthy customs, routines and life styles
C7	CT07 - Developing the ability to work in interdisciplinary or cross-disciplinary teams to provide proposal that contribute to a sustainable environmental, economic, political and social development



C8	CT08 - Appreciating the importance of research, innovation and technological development in the socioeconomic and cultural progress of society
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Learning outcomes			
Learning outcomes	Study programme competences / results		
knowing and understanding the concepts of imprecision and uncertainty versus certainty	AC5 AC6 AC7 AC8	BC1 BC2 BC3 BC6 BC7 BC8 BC9	CC2 CC3 CC6 CC7 CC8
knowing the main models of imprecise reasoning and assessing their adequacy for problem solving in the scope of Artificial Intelligence	AC5 AC6 AC7 AC8	BC1 BC2 BC7 BC8 BC9	CC2 CC4 CC5 CC7 CC8

Contents	
Topic	Sub-topic
Graphical Models	Graphical Models. Approximate and exact inference in graphical models
Bayesian Networks	Bayesian Networks
Decision Networks	Decision Networks
Computing with fuzzy words and models of reasoning	Computing with fuzzy words and models of reasoning

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Laboratory practice	A6 A7 A8 A9 B1 B2 B3 B6 B7 B8 B9 C2 C3 C4 C5 C6 C7 C8	10.5	21	31.5
Objective test	A6 A7 A8 A9 B1 B2 B3 B6 B7 B8 B9 C2 C3 C4 C5 C6 C7 C8	1.5	10.5	12
Guest lecture / keynote speech	A6 A7 A8 A9 B1 B2 B3 B6 B7 B8 B9 C2 C3 C4 C5 C6 C7 C8	10.5	21	31.5
Personalized attention		0		0

(\*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
Methodologies	Description
Laboratory practice	Practical work, normally in groups, with tools of real time systems
Objective test	Individual exam
Guest lecture / keynote speech	Classes of concepts and foundations with small exercises

Personalized attention



Methodologies	Description
Guest lecture / keynote speech Laboratory practice Objective test	Tutorials and remote guidance by e-mail or online platform (Teams, moodle, etc)

Assessment			
Methodologies	Competencies / Results	Description	Qualification
Guest lecture / keynote speech	A6 A7 A8 A9 B1 B2 B3 B6 B7 B8 B9 C2 C3 C4 C5 C6 C7 C8	Depending on how the course evolves, a part of the exam could be consolidated by submitting solved exercises along the lecture classes period	0.5
Laboratory practice	A6 A7 A8 A9 B1 B2 B3 B6 B7 B8 B9 C2 C3 C4 C5 C6 C7 C8	Submission of one or several practical assignments	49.5
Objective test	A6 A7 A8 A9 B1 B2 B3 B6 B7 B8 B9 C2 C3 C4 C5 C6 C7 C8	An individual exam consisting of several exercises that will be assessed up to a maximum of 50 points	50

Assessment comments

Sources of information	
<b>Basic</b>	- Castillo, Gutiérrez, Hadi (2009). Sistemas Expertos y Modelos de Redes Probabilísticas. Monografías Academia Ingeniería - Palma, Marín, eds. (2008). Inteligencia Artificial: Métodos, Técnicas y Aplicaciones. McGraw Hill
<b>Complementary</b>	

Recommendations
<b>Subjects that it is recommended to have taken before</b>
Reasoning and Planning /614544003
<b>Subjects that are recommended to be taken simultaneously</b>
<b>Subjects that continue the syllabus</b>
<b>Other comments</b>

(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.