Universidade de Vigo

Subject Guide 2023 / 2024

IDENTIFYING DATA

Fundamentals of quantum information

Subject	Fundamentals of quantum information
Code	V05M198V01103
Study programme	(*)Máster Universitario en Ciencia e tecnoloxías de información cuántica

Descriptors ECTS Credits		Choose	Year	Quadmester
3		Mandatory	1st	1st

Teaching language	
Department	
Coordinator	Díaz Redondo, Rebeca Pilar
Lecturers	Díaz Redondo, Rebeca Pilar
E-mail	rebeca@det.uvigo.es
Web	http://www.usc.gal/gl/estudos/masteres/ciencias/master-universitario-ciencia-tecnoloxias-informacion-cuantica/20232024/fundamentos-informacion-cuantica-19342-18435-2-103724
General description	

Training and Learning Results

Code	
A2	Know and acquire competence in experimental techniques for the processing of quantum information: interactions, measurements, oscillations, interference, communication systems, ...
A3	Understanding and knowledge of the fundamentals of Quantum Information Theory, as well as two basic aspects of two four types of quantum technologies: computing, communications, metrology, simulation.
A7	Acquire and know how to apply the basic principles of quantum computing: analyze, understand and implement quantum algorithms, master the appropriate computer languages as well as understand the paradigm of two quantum circuits.
B2	To acquire knowledge about quantum systems with many degrees of freedom as a means of storing and processing information.
B3	To know the physical bases that allow encoding and processing information. Understanding of the new rules that Quantum Mechanics imposes for its processing.
B5	To have knowledge of quantum information theory, universal limitations, and their implications for computing, communications, and metrology.
C1	To analyze and break down a complex concept, examine each part and see how they fit together
C2	To classify and identify types or groups, showing how each category is different from the others
C3	To compare and contrast and point out similarities and differences between two or more topics or concepts

Expected results from this subject

Expected results from this subject	Training and Learning Results

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New

A14
A2
A14
A3
A14
A7
B2
B18
B3
B18
B18
B5
B18
B18
C1
C18
C2
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C3
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D18

Contents
Topic

Planning

	Class hours	Hours outside the classroom	Total hours

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

Methodologies
Description

Personalized assistance

Assessment

Description	Qualification	Training and Learning Results

Other comments on the Evaluation

Sources of information
Basic Bibliography
Complementary Bibliography

Recommendations