Teaching Guide				
Identifying Data				2022/23
Subject (*)	Master thesis		Code	614522025
Study programme	Mestrado Universitario en Bioinformática para Ciencias da Saúde			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	2nd four-month period	Second	Obligatory	12
Language	SpanishGalicianEnglish			
Teaching method	Hybrid			
Prerequisites				
Department	BioloxíaCiencias da Computación e Tecnoloxías da InformaciónEnxeñaría de ComputadoresFisioterapia, Medicina e Ciencias BiomédicasMatemáticas			
Coordinador		E-mail		
Lecturers	Cao Abad, Ricardo	E-mail	ricardo.cao@udc.es	
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Web	www.master.bioinformatica.udc.es			
General description	The Master's Thesis is an original exercise to be done individually, consisting of a comprehensive project in the field of bioinformatics from a technological perspective or from the life sciences or health. Professional or researcher in which the competences of the degree are synthesized, and that to overcome it will be presented and defended in front of a university court, when they have overcome the other credits of the degree.			

Study programme competences / results	
Code	Study programme competences / results
A1	CE1 - Ability to know the scope of Bioinformatics and its most important aspects
A10	CE10 - Draft a bioinformatics research project, anticipating obstacles and possible alternative strategies to resolve them.
B1	CB6 - Own and understand knowledge that can provide a base or opportunity to be original in the development and/or application of ideas, often in a context of research
B2	CB7 - Students should know how to apply the acquired knowledge and ability to problem solving in new environments or little known within broad (or multidisciplinary) contexts related to their field of study
B3	CB8 - Students to be able to integrate knowledge and deal with the complexity of making judgements from information that could be incomplete or limited, including reflections on the social and ethical responsibilities linked to the application of their skills and judgments
B4	CB9 - Students should know how to communicate their findings, knowledge and latest reasons underpinning them to specialized and non-specialized audiences in a clear and unambiguous way
B5	CB10 - Students should possess learning skills that allow them to continue studying in a way that will largely be self-directed or autonomous.
B6	CG1 -Search for and select the useful information needed to solve complex problems, driving fluently bibliographical sources for the field

B7	CG2 - Maintain and extend well-founded theoretical approaches to enable the introduction and exploitation of new and advanced technologies
B8	CG3 - Be able to work in a team, especially of interdisciplinary nature
C1	CT1 - Express oneself correctly, both orally writing, in the official languages of the autonomous community
C2	CT2 - Dominate the expression and understanding of oral and written form of a foreign language
C3	CT3 - Use the basic tools of the information technology and communications (ICT) necessary for the exercise of their profession and lifelong learning
C4	CT4 - Be able to analyze the real situation, formulate and implement solutions based on knowledge and aimed at the common good and the exercise of open, educated, critical, committed, democratic and solidary citizenship.
C5	CT5 - Understand the importance of entrepreneurial culture and know the means available to enterprising people
C6	CT6 - To assess critically the knowledge, technology and information available to solve the problems they face to.
C7	CT7 ? To maintain and establish strategies for scientific updating as a criterion for professional improvement.
C8	CT8 - Rating the importance that has the research, innovation and technological development in the socio-economic and cultural progress of society

Learning outcomes			
Learning outcomes	Study programme competences / results		
Know how to develop, present and defend before a court a comprehensive biomedical informatics project of a research or professional nature in which the competences acquired in the degree are synthesized.	AJ1 AJ10	BJ1 BJ2 BJ3 BJ4 BJ5 BJ6 BJ7 BJ8	CJ1 CJ2 CJ3 CJ4 CJ5 CJ6 CJ7 CJ8

Contents	
Topic	Sub-topic
In the Master's Thesis, the student must carry out a comprehensive bioinformatics project, of a research or professional nature, in which the competences acquired in the degree are synthesized.	In order to proceed to the defense, the student must have passed the credits of the rest of the subjects of the master's degree.

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Oral presentation	A1 A10 B1 B2 B3 B4 B5 B6 B7 B8 C1 C2 C3 C4 C5 C6 C7 C8	2	3	5
Aprendizaxe servizo	A1 A10 B1 B2 B3 B4 B5 B6 B7 B8 C1 C2 C3 C4 C5 C6 C7 C8	1	0	1
Supervised projects	A1 A10 B1 B2 B3 B4 B5 B6 B7 B8 C1 C2 C3 C4 C5 C6 C7 C8	14	270	284
Personalized attention		10	0	10
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	**Description**
Oral presentation	The master's thesis will be defended in front of an examining board that will be established by the Academic Committee for each call.
Aprendizaxe servizo	Desenvolvemento do traballo no contexto de necesidades reais da súa contorna coa fin de mellorala, en colaboración con algunha entidade e co obxectivo de proporcionar un servizo á comunidade. Esta metodoloxía constitúe unha posible modalidade (non obrigatoria) de desenvolvemento do TFM
Supervised projects	The student must do a work in the field of bioinformatics or original health informatics tutored by a professor of the degree with the possibility of co-direction of other professionals or researchers related to the subject of the work.

Personalized attention	
Methodologies	**Description**
Oral presentation Supervised projects	During the work the student should receive personalized attention from his/her tutor(s). Personalized attention is essential to define, guide, supervise and delimit the work, as well as to prepare the oral test.

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
Oral presentation	A1 A10 B1 B2 B3 B4 B5 B6 B7 B8 C1 C2 C3 C4 C5 C6 C7 C8	Oral presentation and defense before a panel of judges. The presentation should summarize the characteristics and depth of the work done. The question and answer session should demonstrate clarity and knowledge of the issues raised by the panel.	30
Supervised projects	A1 A10 B1 B2 B3 B4 B5 B6 B7 B8 C1 C2 C3 C4 C5 C6 C7 C8	Completion of a comprehensive and original project in the field of bioinformatics of a research or professional nature. The elements to be evaluated are: - Originality, quality and scope of the work presented. - Document	70

Assessment comments
The grading system will be expressed by means of a numerical grade in accordance with that established in art. 5 of Royal Decree 1125/2003 of September 5 (BOE September 18), which establishes the European credit system and the grading system for official university degrees valid throughout the national territory Grading system: 0-4.9=Suspenso 5-6.9=Aprobado 7-8.9=Notable 9-10=Sobresaínte 9-10 Matrícula de Honra (Graciable) Master website publishes the regulations and deadlines for the procedures for the delivery and defense of the Master Thesis https://www.master.bioinformatica.fic.udc.es/trabajo-fin-master/normativa-tfm/

Sources of information	
Basic	- Web master Bioinformatica (2018). Normativa TFM Máster Bioinformática. https://www.master.bioinformatica.fic.udc.es/ https://www.master.bioinformatica.fic.udc.es/trabajo-fin-master/normativa-tfm/https://www.master.bioinformatica.fic.udc.es/trabajo-fin-master/normativa-tfm/
Complementary	

Recommendations
Subjects that it is recommended to have taken before
Introduction to databases/614522002 Introduction to molecular biology/614522004 Genetics and molecular evolution/614522005 Genomics/614522006 Data structures and algorithmics for biological sequences/614522013 Advanced processing of biological sequences/614522020 New trends and applications in bioinformatics and biomedical engineering/614522021 Biomedical knowledge management /614522022 Design and management of research projects/614522023 Computational intelligence for high dimensional data/614522024 Biomechanical engineering, sensoring and telemedicine/614522014 Fundamentals of neuroscience/614522015 Neuroengineering and innovation in neuroscience/614522016 Health Information Systems/614522017 Advanced medical visualization/614522019 Computational intelligence for bioinformatics/614522012 Fundamentals of bioinformatics/614522008 Advanced statistical methods in bioinformatics/614522009 Analysis of biomedical images/614522010 High performance computing in bioinformatics/614522011 Introduction to programming/614522001 Probability. statistics and elements of biomathematics/614522007 Foundations of Artificial Intelligence/614522003
Subjects that are recommended to be taken simultaneously
Practicum (professional practice)/614522018
Subjects that continue the syllabus
Other comments
To help get an sustainable environment, the classworks will be :a.- Majority will be requested in digital electronic.b.- If is necessary use paper:- Plastics will not be used.- Double-sided prints will be made.- Recycled paper will be used.- Drafting will be avoided.