COURSE DATA

Data Subject	
Code	42602
Name	Computers and operating systems
Cycle	Master's degree
ECTS Credits	6.0
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. year	Period
2116 - Master's Degree in Bioinformatics	School of Engineering	1	First term

Subject-matter

Degree	Subject-matter	Character
2116 - Master's Degree in Bioinformatics	17 - Computers and operating systems	Optional

Coordination

Name	Department
ARNAU LLOMBART, VICENTE	240 - Computer Science

SUMMARY

In this course we will see the basic concepts of computer architecture. Analyze how information is represented in a computer and how to manage. Study of computer operating systems and give the basics of file system. Interconnection networks of computers and their use will be important to understand how the current computer systems. Analyze the execution of processes on a computer and finally we will see advanced concepts of high performance computing (HPC).

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

None

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

2116 - Master's Degree in Bioinformatics

- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.
- Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.
- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.
- Students should demonstrate self-directed learning skills for continued academic growth.
- Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it sensibly.
- Students should possess and understand foundational knowledge that enables original thinking and research in the field.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

We will dominate the basics of how computers work and function.

Know, understand and evaluate the structure and architecture of computers and the basic components that comprise them. Understand the binary representation of the information and how different types of data are stored on the computer. Understand the fundamentals of operating systems and use them to know.

Solve data management using a computer system. Understand and master the operation of the file system and how information is managed by the operating systems. Understand the concept of program.

DESCRIPTION OF CONTENTS

1. Introduction to computer science.

Introduction to Computer Science. The computer as a tool for problem solving.

2. Representation of the information

Representation of information in the computer. The binary system.

3. Computer Architecture

We analyze the components of a Computer. Memory, arithmetic unit, disk, peripherals, etc..

4. Architecture of an operating system

Operating systems controlling the operation of computers. See its structure and functioning.

5. Programs and processes

We study the characteristics and differences between programs and processes.

6. Networks

Concept, protocols, applications, common applications (file sharing, shared storage, web, XHTML and XML). Basic security.

7. Windows.

We will study and manage the environment of windows operating systems.

8. Filesystems

We will study the various file systems can use a computer to store information.

9. Process Management

In computers for scientific computing is important a good process management. We will discuss how to launch and control processes.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	18,00	100
Laboratory practices	12,00	100
Development of group work	5,00	0
Development of individual work	15,00	0
Study and independent work	25,00	0
Readings supplementary material	20,00	0
Preparation of evaluation activities	15,00	0
Preparing lectures	10,00	0
Preparation of practical classes and problem	15,00	0
Resolution of case studies	10,00	0
Resolution of online questionnaires	5,00	0
TOTAL	**150,00**	

TEACHING METHODOLOGY

MD1 - Task training of the teaching-learning environment interaction in the classroom through expository sessions. Previous assignments include preparation (information search, reading texts supplied by teachers), teaching sessions themselves and the later work of deepening. MD2 - Learning through problem solving and case studies, through which it is acquiring skills on different aspects of materials and subjects. MD3 - Hands-on lab. Include preparation, implementation of practices to monitor and teacher support, independent work online and reporting practices. MD4 - Cross-disciplinary skills. Include attendance at courses, conferences or round tables organized by the CEC of the Master and / or conduct of a bibliographic work on issues that contribute to the integral. It produces a report of activities.

EVALUATION

In the two calls:

SE1 Continuous assessment: minimum 5 and maximum 15.

SE2 Activities: minimum 10 and maximum 20.

SE3 Laboratory: minimum 25 and maximum 75.

SE4 Exams: minimum 10 and maximum 40.

REFERENCES

Basic

- Referencia b1: INTRODUCCIÓN A LA INFORMÁTICA (Cuarta Edición). Alberto Prieto, Antonio Lloris, Juan Carlos Torres. Ed. McGraw-Hill. 2006.
- Referencia b2: FUNDAMENTOS DE SISTEMAS OPERATIVOS. SANTIAGO CANDELA, EDICIONES PARANINFO, S.A., 2007. ISBN 9788497325479

Additional

- Referencia c1: INTRODUCCION A LA INFORMATICA (ED. 2012). ANA MARTOS RUBIO, ANAYA MULTIMEDIA, 2011. ISBN 9788441529410
- Referencia c2: LINUX. V.V. A.A. Ed. ANAYA MULTIMEDIA. 2010. ISBN 9788441527256