

## BASIC DETAILS:

<b>Subject:</b>	REDES Y COMUNICACIONES		
<b>Id.:</b>	33307		
<b>Programme:</b>	GRADUADO EN BIOINFORMÁTICA. PLAN 2019 (BOE 06/02/2019)		
<b>Module:</b>	INFORMÁTICA		
<b>Subject type:</b>	OBLIGATORIA		
<b>Year:</b>	3	<b>Teaching period:</b>	Segundo Cuatrimestre
<b>Credits:</b>	3	<b>Total hours:</b>	75
<b>Classroom activities:</b>	36	<b>Individual study:</b>	39
<b>Main teaching language:</b>	Inglés	<b>Secondary teaching language:</b>	Castellano
<b>Lecturer:</b>		<b>Email:</b>	

## PRESENTATION:

This course introduces the student to the principles and basis of computer networks and communications. The course is centered in the TCP/ IP protocol and its different communication layers following a top-down approach with examples and practice sessions. At the end of the course the students will understand the basics of the most used communication protocol in the internet, its architecture and security aspects.

## PROFESSIONAL COMPETENCES ACQUIRED IN THE SUBJECT:

<b>General programme competences</b>	G01	Use learning strategies autonomously for their application in the continuous improvement of professional practice.
	G02	Perform the analysis and synthesis of problems of their professional activity and apply them in similar environments.
	G03	Cooperate to achieve common results through teamwork in a context of integration, collaboration and empowerment of critical discussion.
	G05	Communicate professional topics in Spanish and / or English both orally and in writing.
	G06	Solve complex or unforeseen problems that arise during the professional activity within any type of organisation and adapt to the needs and demands of their professional environment.
	G07	Choose between different complex models of knowledge to solve problems.
	G09	Apply information and communication technologies in the professional field.
	G10	Apply creativity, independence of thought, self-criticism and autonomy in the professional practice.
<b>Specific programme competences</b>	E02	Develop the use and programming of computers, databases and computer programs and their application in bioinformatics.
	E03	Apply the fundamental concepts of mathematics, logic, algorithmics and computational complexity to solve problems specific to bioinformatics.
	E04	Program applications in a robust, correct, and efficient way, choosing the paradigm and the most appropriate programming languages, applying knowledge about basic algorithmic procedures and using the most appropriate types and data structures.
	E05	Implement well-founded applications, previously designed and analysed, in the characteristics of the databases.
	E07	Apply the principles, methodologies and life cycles of software engineering to the development of a project in the field of bioinformatics.
	E08	Evaluate applications and computer systems, previously designed, developed and selected, ensuring their reliability and quality, in accordance with ethical principles and current legislation and regulations.
	E09	Develop and maintain descriptive documentation of the genesis, production and operation of computer systems.
	E10	Design and deploy the architecture of IT systems through the definition of software, hardware and the necessary communications according to some requirements.
	E11	Apply the principles and techniques of concurrent or parallel computing for the creation and simulation of bio-inspired processes.

## PRE-REQUISITES:

The course will be delivered in English language. Academic reading and writing skills are expected from the students.

## SUBJECT PROGRAMME:

### Subject contents:

<b>1 - Introduction to computer networks and the internet</b>
<b>2 - TCP/IP protocol</b>
2.1 - Application Layer
2.2 - Transport Layer
2.3 - Network Layer
2.4 - Link Layer
<b>3 - Advanced topics</b>
3.1 - Wireless and mobile networks
3.2 - Security

Subject planning could be modified due unforeseen circumstances (group performance, availability of resources, changes to academic calendar etc.) and should not, therefore, be considered to be definitive.

## TEACHING AND LEARNING METHODOLOGIES AND ACTIVITIES:

### Teaching and learning methodologies and activities applied:

**Magistral lectures** will be used to explain the different aspects of the subject and encouraged to be highly dynamic and interactive with visual examples. Small exercises will be solved during class in order to consolidate the concepts.

Magistral lectures schedule will be altered with **webinars and laboratory sessions** where the students consolidate and practice the subject concepts mixing problem-based and project-based learning approaches. Additionally, **practical groupwork sessions** are scheduled where the students will put in practice the concepts of the subject using a project-based learning approach.

The subject requires a high effort from the student, and it is important to follow the concepts and exercises during the presential lectures. Additionally, the students will have via PDU many proposed exercises by the teacher with small tasks and challenges for autonomous learning. As a matter of that, the lecturer will be available to students during the tutorial schedule to help them in all matters concerning the course.

### Student work load:

Teaching mode	Teaching methods	Estimated hours
<b>Classroom activities</b>	Master classes	13
	Practical exercises	3
	Laboratory practice	6
	Other practical activities	6
	Assessment activities	2
	Video Class / Webinars	6
<b>Individual study</b>	Tutorials	2
	Individual study	14
	Individual coursework preparation	8
	Group coursework preparation	10
	Research work	1
	Recommended reading	4
	<b>Total hours:</b>	75

## ASSESSMENT SCHEME:

### Calculation of final mark:

Individual coursework:	30	%
Group coursework:	20	%
Final exam:	50	%
<b>TOTAL</b>	100	%

\*Las observaciones específicas sobre el sistema de evaluación serán comunicadas por escrito a los alumnos al inicio de la materia.

## BIBLIOGRAPHY AND DOCUMENTATION:

### Basic bibliography:

KUROSE, JF and ROSS, KW. Computer networking. A Top-down approach (6° Ed.). Pearson, 2012.

### Recommended bibliography:

### Recommended websites:

CISCO [cisco.com](https://www.cisco.com)

\* Guía Docente sujeta a modificaciones