

COURSE GUIDE

Last updated date: 21/06/2021
Fecha de aprobación: 21/06/2021

Fundamentals of Computer Science for Biology

Grado (Bachelor's Degree)	Bachelor's Degree in Biology	Branch	Sciences
Module	Materias Básicas Instrumentales para la Biología	Subject	Informática
Year of study	1º	Semester	1º
ECTS Credits	6	Course type	Core course

PREREQUISITES AND RECOMMENDATIONS

High school mathematics are recommended.

BRIEF DESCRIPTION OF COURSE CONTENT (According to the programme's verification report)

- Tools for work and communication: Operating systems, ofimatics, thematic dictionaries, Image processing, e-learning platforms, presentations.
- Information search: browsers, databases, university libraries.
- Scientific/technical software: Data processing, Mathematics, Simulation, Cartography.
- Introduction to programming: applications, programming and statistics with python.

SKILLS

GENERAL SKILLS

- CG01 - Capacidad de organización y planificación
- CG02 - Trabajo en equipo
- CG03 - Aplicar los conocimientos a la resolución de problemas
- CG04 - Capacidad de análisis y síntesis
- CG05 - Conocimiento de una lengua extranjera
- CG07 - Conocimientos de informática relativos al ámbito de estudio

SUBJECT-SPECIFIC SKILLS

- CE25 - Diseñar modelos de procesos biológicos
- CE36 - Implantar y desarrollar sistemas de gestión relacionados con la Biología
- CE41 - Manejar las bases de datos y programas informáticos que pueden emplearse en el ámbito de Ciencias de la Vida



- CE77 - Saber Informática aplicada a la Biología

LEARNING OUTCOMES

- Know and handle some work and communication tools: Operating systems, ofimatics, thematic dictionaries.
- Know and handle software for image processing, e-learning platforms and presentations.
- Know and perform information searches using browsers, databases and university libraries.
- Know and handle some scientific/technical software: data processing, Mathematics, Simulations, Cartography.
- Design and implement simple computer programs and know how to apply them to solve specific problems in biology.
- Solve statistical problems with a programming language such as python.

PLANNED LEARNING ACTIVITIES

THEORY SYLLABUS

1. Introduction to Computer Science
2. Representation of information
3. Databases
4. Programming fundamentals
5. Programming fundamentals in python
6. Basic data types
7. Control structures
8. Advanced data types
9. Introduction to bioinformatics

PRACTICAL SYLLABUS

Seminars / Workshops:

- Ofimatics skills.
- Python applications.

Laboratory practices:

1. Spreadsheets. Charts.
2. Databases.
3. Basic programming in python

RECOMMENDED READING

ESSENTIAL READING



- Beekman, G. 2009. Tomorrow's technology and you. Prentice Hall.
- Beekman, G. 2006. Introducción a la informática. Pearson educación.
- Delgado, J.M. & Paz, F. Openoffice.Org 3.0 (Guía Práctica). Anaya Multimedia.
- Llena, S. 2019. Aprender Office 365/2019 con 100 ejercicios prácticos. Marcombo.
- Hinojosa, A.P. 2016. Python. Paso A Paso. Ra-ma.

COMPLEMENTARY READING

- Pilgrim, M. 2009. Inmersión en python

RECOMMENDED LEARNING RESOURCES/TOOLS

Python. <https://www.python.org/doc/>

PRADO 2 platform. <https://prado.ugr.es>

Microsoft 365 help & learning. <https://support.microsoft.com/en-us/microsoft-365>

OpenOffice documentation. <https://wiki.openoffice.org/wiki/Documentation>

TEACHING METHODS

- MD01 Lección magistral/expositiva
- MD02 Sesiones de discusión y debate
- MD03 Resolución de problemas y estudio de casos prácticos
- MD04 Prácticas de laboratorio y/o clínicas y/o talleres de habilidades
- MD06 Prácticas en sala de informática
- MD07 Seminarios
- MD10 Realización de trabajos en grupo
- MD11 Realización de trabajos individuales

ASSESSMENT METHODS (Instruments, criteria and percentages)

ORDINARY EXAMINATION DIET

Continuous evaluation:

Formative activities	Weight
Theory	50%
Practice	50%

- **Theory (50%) [S1]:** There will be three tests (20%, 15% and 15% of the evaluation, respectively). The first one will happen after lesson 3, the second in the middle of python lessons and the third one after all lessons. These tests enable a continuous evaluation of the theory part of the course.
- **Practice (50%) [SE2, SE3, SE4]:** It will comprise participation and evaluation of laboratory activities, seminars and supervised works.



The detail of this ponderation is as follows:

- SE1: Evaluation of the acquired level through theory classes: 50% (Theory)
- SE2: Evaluation of the acquired level through laboratory activities: 20% (Practice)
- SE3: Evaluation of the acquired level through seminars and guided work: 20% (Practice)
- SE4: Evaluation of assistance, attitude and participation in activities: 10% (Practice)

It will be necessary to obtain a final mark of 5 (out of 10) or higher to pass the course. A minimum mark of 4 in both theory and practice is required. If that is not met, the final evaluation for the course will be the minimum between 4.9 and the student marks.

EXTRAORDINARY EXAMINATION DIET

- The student will take an exam including theory and practice. All the lessons and activities in the syllabus will be included in the exam.
- Students not attending the practical part of the exam will maintain the marking they obtained during the ordinary session in this part.
- The final mark of the course will be the sum of each part with a weight of 50% each.
- To pass the course, it is necessary to obtain a mark of 5 (out of 10) or higher. It is also mandatory to obtain 4 or more in each part (theory and practice), otherwise, the final mark for the course will be the minimum between 4.9 and the student marks.

SINGLE FINAL ASSESSMENT (evaluación única final)

- The students will take two tests: one to evaluate their knowledge regarding the theory aspects of the course, and another for evaluating acquired competences related to the practical part.
- The final mark will be the average of both marks. To pass the course, it is necessary to obtain a mark of 5 (out of 10) or higher. It is also mandatory to obtain 4 or more in each part (theory and practice), otherwise, the final mark for the course will be the minimum between 4.9 and the student marks.

ADDITIONAL INFORMATION

Following the recommendations of CRUE and the Secretariat of Inclusion and Diversity of the UGR, the mechanisms for the acquisition and assessment of competences included in this syllabus will be applied according to the design principle for all people, facilitating learning and demonstration of knowledge according to the needs and functional diversity of the students.

