

**COURSE DATA****Data Subject**

<b>Code</b>	33165
<b>Name</b>	Biology
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2021 - 2022

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1102 - Degree in Biotechnology	Faculty of Biological Sciences	1	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1102 - Degree in Biotechnology	80 - Biology	Basic Training

**Coordination**

<b>Name</b>	<b>Department</b>
MARTINEZ TORRES, DAVID	194 - Genetics

**SUMMARY**

Biology is a compulsory and basic subject in the Degrees in Biotechnology and in Biochemistry and Biomedical Sciences of the University of Valencia that, taught at the start of the formative process of the students, familiarises them with the scientific theory that unifies and integrates the knowledge taught in the remaining biological disciplines. This is part of the matter Principles of Biology together with the subject Biological Diversity. The main aim of this subject is to offer a vision of the biology through several issues of special relevance in the context of current science and society, including:

- Theory of the evolution.
- Natural selection.
- Adaptation and speciation.
- Other processes of evolutionary change.
- Populations, communities and sustainability.
- Crisis of biodiversity.
- Human diversity.
- Biology and gender.



## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

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

### Other requirements

## OUTCOMES

### 1102 - Degree in Biotechnology

- Ser capaç de dar una breu charla a un auditorio no especializado sobre un tema general de Biología con impacto actual en la sociedad.
- Be able to place the different living beings in the phylogenetic tree.
- Be able to understand the evolutionary relationships between organisms.
- Be able to understand the biological basis of human diversity and its cultural implications, including gender difference.

## LEARNING OUTCOMES

The following personal skills should be accomplished:

- Place the Biology in the context of science through the knowledge of some of its main issues and current problematic
- Capacity of analysis, synthesis and methodical and rigorous work
- Elaborate summaries and critical reviews of texts of biological and scientific content
- Obtain scientific information and be able to evaluate its validity
- Develop the ability to discuss
- Ability to communicate the scientific knowledge

Social skills:

- Skill to work in a team
- Awareness and respectfulness of the human cultural diversity
- Ability to be aware of the environmental risks and of the biodiversity crises
- Commitment with the conservation and with the sustainable development
- Commitment with the defense and practice of equality policies



## DESCRIPTION OF CONTENTS

### 1. Theoretical lessons

1. The finding and the concept of the Evolution.
2. Decoding the Tree of Life.
3. Genetic processes in Evolution I.
4. Genetic processes in Evolution II.
5. Evolution of genes and genomes.
6. The origin of species.
7. Selection, adaptation and evolution of life strategies.
8. The evolution of form.
9. Human evolution.
10. The origin of life.

## WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	46,00	100
Classroom practices	8,00	100
Computer classroom practice	4,00	100
Tutorials	2,00	100
Attendance at events and external activities	4,00	0
Development of group work	10,00	0
Study and independent work	76,00	0
<b>TOTAL</b>	<b>150,00</b>	

## TEACHING METHODOLOGY

The subject is organized around different learning activities including the following:

- **Theoretical lessons** in which the lecturers will present the fundamental concepts of each lesson, using audiovisual resources that will be previously accessible for the students through the usual platforms. It will address the students to the suitable bibliography and the resources to use for a deeper study of the presented concepts and will emphasize those aspects related with the conferences and the homework dealt with during the classroom activities..
- **Conferences** on current topics in Biology that will be useful to illustrate concepts introduced in the classroom and will help the students to get an integrated perspective. These conferences will be usually chosen from those offered in conference cycles ongoing in the Faculty of Biological Sciences or other centres of the University of Valencia. Later on, the students will be asked to present a summary of some selected conferences.
- **Classroom Activities.** Students organized in groups will prepare and discuss, with the moderation of the teacher, a series of specific topics based on scientific papers that will be related with the main concepts that appear in the theory sessions. Two practical sessions in the computer room are



also scheduled for the analysis of simulated and real data.

- **Group tutoring sessions.** Sessions with reduced student groups to discuss doubts, and/or results obtained by the different groups in the classroom activities.
- **On-line individual tutoring.**

## EVALUATION

A continuous evaluation of each student will be carried out, based on the different activities described in the Methodology section. Assistance to all the activities will be considered in addition to, the execution and presentation in time of all tasks and complementary activities. The degree of participation and of involvement in the process of education-learning will also be considered. The particular aspects to evaluate will be the following:

- **Exam.** An examination of knowledge will be taken with questions on both theory and practical issues. This test will represent a 70% of the final mark. The minimum mark in the exam needed to pass the course will be 5 in a 0 to 10 scale
- The marks obtained on the **homework** and on **the classroom activities** and **computer work** will contribute altogether to **20%** of the global mark.
- Assistance to **interdisciplinary conferences** programmed during the first term, and preparation of a summary will represent a **10%** of the final mark.

## REFERENCES

### Basic

- Barton N.H., Briggs, D.E.G., Eisen, J.A., Goldstein, D. B., y Patel, N.H. 2007. Evolution. CSHL Press.
- Fontdevila, A., y Moya, A. 2004. Evolución. Editorial Síntesis, Madrid.
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- Futuyma, D.J. 2009. Evolution. 2nd edition. Sinauer.
- Ridley, M. 2004. Evolution. 3rd edition. Blackwell.
- Stearns, S.C., y Hoekstra, R.F. 2005. Evolution: An introduction. 2nd edition. Oxford University Press, Oxford.

### Additional

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- Ayala, F.J. (1999). La teoría de la evolución. De Darwin a los últimos avances de la Genética. Temas de Hoy.
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- Majerus, M., Amos, W. y Hurst, G. 1996. Evolution. The four billion year war. Longman.
- Nei, M. & S. Kumar. (2000). Molecular Evolution and Phylogenetics. Oxford University Press.
- Niklas, K.J. (1997). The Evolutionary Biology of Plants. Univ. Chicago Press.
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- Wiens, J.J. (2000). Phylogenetic Analysis of Morphological Data. Smithsonian Institution Press.

## ADDENDUM COVID-19

**This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council**

The teaching plan distribution and the relationship between in-class and non presential activities may be modified throughout the course period if it is required because of the health emergency conditions by Covid-19.

### **Teaching Methodology:**

The two in-class sessions of Informatics will be replaced by online sessions if the sanitary hygiene situation requires it. The original assessment is maintained.

The Conferences activity will only be carried out in person if a space (classroom / auditorium) that ensures the appropriate interpersonal distance is assigned. Otherwise, conferences available on virtual platforms, with a theme similar to the original objectives, will be chosen or conferences will be replaced by bibliographical works. In either case, the original assessment is maintained.