COURSE DATA

DATA SUBJECT

Code: 33041
Name: Biology
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1106 - Degree in Biology	Facultat de Ciències Biològiques	1	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1106 - Degree in Biology	Biología	BASIC

COORDINATION

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SUMMARY

Biology is a theme in the first term of the Biology Degree. It offers an overview through subjects of special interest in the context of science and society, including Evolution, Ecology and sustainability, Biodiversity crisis, Human diversity, and Biology and gender. It covers the essentials of a course of General Biology at university level addressing them with regards to fields of the biological knowledge of high scientific and social present times.

The general aim of this course is providing the first year Degree students of a global vision of the impact of Biology in science and society. This general aim is based on the knowledge of different levels of complexity of the biological organisation, presented and explained in correlation with the social impact of some of the big challenges of the contemporary biological research. Essential parts of this general aim are, as in the rest of courses of Biology, to promote in the students a critical and scientific attitude, develop a precise and rigorous biological language, and establish a solid base on which build the complete formation as biologists.

The contents of the biology course have been designed considering its teaching context in a wider matter of 30 ECTS, including other deeper aspects. Therefore, Biology bases on the contents included in any modern textbook of biology as the fundamental knowledge of this science, the structure of study and specialities, although some of them are briefly attended since they are addressed in greater depth in other courses of the same academic year, with which there is a coordination of contents, as well as of complementary formative activities. In concrete, the structure of the cell and the cellular cycle is addressed in 'Structure of the cell' and the biological evolution is object of 'The tree of the life'. Although the references to these two 'thematic areas' will be constant, the program of Biology will develop specifically no concept in association.

The program must be also sensitive to the emphasis with which biochemistry and molecular biology are treated during the last course of high school. This part of biology has been removed from the lecture sessions and collected in a thematic block 1, assisted by means of tutorials. Our students intensively review these topics on the base of problems and classical experiments, and they will also have self-study materials.

The thematic blocks 2, 3 and 4 are presented along 22 classroom sessions, condensing the maximum of attendance of the student. Students will receive orientation to the study of the biology concentrated in key aspects. These contents consider the background that the student brings from the high school and that afterwards will be refined along the Degree.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

No requirements or previosus recommendations

COMPETENCES / LEARNING OUTCOMES

1106 - Degree in Biology

Apply principles of physics, chemistry and geology to the field of biology.

Develop the skills needed to carry out a professional activity with a proactive attitude towards the world of work and with an innovative and entrepreneurial spirit. Be able to apply sustainability criteria and to work within the framework of professional ethics.

Know how to analyse the diversity of living beings and ecosystems and global, regional and local environmental problems. Know how to relate the structure and function of biomolecules and to apply the methodologies of global structural and functional analysis of genomes and cellular processes.

Organise, plan and manage information in a manner that allows the individual to analyse, synthesise and develop critical reasoning that can be applied to solve problems, make decisions and carry out work.

Students must be able to apply their knowledge to their work or vocation in a professional manner and have acquired the competences required for the preparation and defence of arguments and for problem solving in their field of study.

Students must be able to communicate information, ideas, problems and solutions to both expert and lay audiences.

Students must have acquired knowledge and understanding in a specific field of study, on the basis of general secondary education and at a level that includes mainly knowledge drawn from advanced textbooks, but also some cutting-edge knowledge in their field of study.

Students must have developed the learning skills needed to undertake further study with a high degree of autonomy.

Students must have the ability to gather and interpret relevant data (usually in their field of study) to make judgements that take relevant social, scientific or ethical issues into consideration.

Use ICTs, apps and other computer tools to manage and disseminate information in both educational and professional environments.

Use scientific language, both oral and written, and be able to adapt the register to the target audience and/or readers. Use the most common foreign languages in each discipline as a vehicle for communication in a globalised system.

DESCRIPTION OF CONTENTS

1. Chemical components of life

1.1. The chemical components of the cell. Water. Carbon chemistry. Kinds of biomolecules.
1.2. Proteins: infrastructure and cell working force.
1.3. Nucleic acids: storage and transmission of genetic information.
1.4. Lipids and membranes.
1.5. A tour of the cell: biomolecules in cellular context.

2. Levels of organization and molecular and cellular bases of life

2.1. Levels of organisation in Biology. Two types of cell. Systems Biology and regulation. Diversity. Evolution explains unity and diversity. Research approaches in Biology. Science, technology and society.
2.2. Metabolic and ecological context of biomolecules.
2.3. From gene to protein: gene expression.
2.4. Cell cycle.
2.5. Systems Biology and omic techniques.
2.6. Recombinant DNA technology.

3. Diversity, biological form and function

3.1. Archaea and Bacteria.
3.2. Protists I.
3.3. Protists II.
3.4. Briophites and Pteridophites.
3.5. Seed plants.
3.6. Fungi.
3.7. Animal form and fucntion.
3.8. Animal reproduction and development.
3.9. Animal diversity.
3.10. Animal behaviour.

4. Ecology

4.1. Introduction to Ecology.
4.2. Ecology of populations.
4.3. Ecology of communities.
4.4. Ecology of ecosystems and conservation.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	30,00
Theory	30,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	26,00
Independent study and work	62,00
Preparation of lessons	0,00
Preparation for assessment activities	2,00
Resolution of case studies	0,00
Total hours	**90,00**

TEACHING METHODOLOGY

The subject makes use of the following teaching methodologies:

. Lecture class

. Participatory and/or debate class

. Reading/commenting on texts

. Seminar and/or conference

. Information search

. Learning based on solving exercises and problems

. Oral presentations and/or posters (panels)

Different learning activities are used along the course. Except activity ¿Preparation of seminars¿, where work is developed in groups, all other proposed activities are individual tasks and as such will be evaluated. The proposed activities are the following:

1. Methodologies focused on the development of the individual curriculum of Biology.

1.1. Lectures

The teachers will make brief presentations of fundamental concepts of each topic in interactive classes, using appropriate audiovisual resources that will be accessible to students through the university virtual teaching platform, according to established rules. Students will be advised about adequate literature and resources to be used for further study of the concepts that will also be correlated with the topics of the conferences and seminars that are integrated in the course program. Lectures will be aimed to the preparation of students for attending the conferences. Attendance to these classes is required and teachers can establish controls when appropriate.

1.2. Attendance to conferences and seminars

Various topical issues in Biology will be addressed through four conferences scheduled to allow students to connect biological learned concepts and to provide them an integrated and scientific view of the individual concepts covered in the lectures. These conferences will be offered as part of permanent cycles in the Faculty of Biological Sciences or other centers of the University of Valencia, or specifically for the subject. Organized by the curse alternatively the lectures may be followed by streaming or by video conference (recorded or not) in case it may be interesting. Students will draw up a report for each lecture in the format of scientific note or will participate in some related activity. After the first conference a tutorial session will be introduced to discuss the content and style of the notes (see tutorials). Conference attendance is mandatory.

1.3. Book reading (book workshop)

Reading of a popular science book in the field of Biology chosen by the student from a list provided at the beginning of the course and which the student must study. A group tutorial will be organized as a colloquium. The supervision of each text will be organized by a different professor of the subject, who will act as coordinator of the reading. Each text can be accompanied by reading or preparing complementary materials, as well as doing exercises in the classroom (see evaluation section).

1.4. **Group tutorial sessions associated to the individual curriculum in Biology**

Attendance at tutorials is mandatory. The maximum attention is expected from the students in the realization of tutorials. Correct participation in these activities is required and subject to evaluation at the discretion of the teaching staff and in those sections that may be related to the specific content of each tutorial. The five tutorials are synchronized with the contents of the subject, but they are independent of those that are exposed in point 2, relative to the transversal activity.

- **Tutorial 1 (2 hours): Interpretation of problems and experiments**. The student solves a test relative to classic methods and experiments in biology and prepares individually the responses. Then the group discusses with the teacher the responses. In this tutorial, particular importance is given to biochemistry and molecular biology, so students will have previously available presentations and study guides based on the textbook to help preparation of these issues.

- Tutorial 2 (1 hour): Planning the summary of a conference and other writing in science. After the first conference, the student will present a summary, and this will be discussed in this supervision.

- **Tutorial 3 (2 hours): Biodiversity: meaning and limits**. For an hour and with previous training through reading and exercises, students discuss the use and abuse of the concept of biodiversity.

- Tutorial 4(2 hours): Biological cycles: meaning and types. With previous information through lectures and exercises, the students debate about the characteristics of reproduction and biological cycles in living organisms.

- **Tutorial 5 (2 hours): Reading Workshop**. After reading the popular science book, students participate in a workshop. Students should previously elaborate a reading note and prepare questions and concerns about the reading, which may be answered by other students or by the teacher, if necessary. It is expected that students direct discussion. The discussion should be ordered. Students can provide additional reading or criticism if they find them relevant. As the reading tutorial brings together students from different groups, it is programmed out of the standard schedule and properly announced.

2. Preparation of seminars in posters: interdisciplinary activity in groups

Seminars of this subject are approached from an interdisciplinary perspective in collaboration to all the other subjects of the course. Students in groups of three will elaborate a poster on a topic proposed by professors at the beginning of the course. To do this, they will have the advice of tutor professors designated for that purpose. A common session to present the posters will be held before the end of the course. In this session, students should explain their work and answer the questions of teachers and other students. All the professors of involved subjects will evaluate the posters jointly. The use of English will be valued. Alternative to this activity other transversal activities endorsed by the CAT may be possible in the framework of some educative innovation project.

2.1. Group tutorials associated with the preparation of posters

Attendance at tutorials is mandatory. The maximum attention is expected from the students in the realization of tutorials. Correct participation in these activities is required and subject to evaluation at the discretion of the teaching staff and in those sections that may be related to the specific content of each tutorial. These tutorials are not synchronized with the contents of the subject and their programming is independent of those that are exposed in point 1.4.

- **Tutorial 1 (2 hours): Presentation of the interdisciplinary activity.** This tutorial represents the presentation of the interdisciplinary activity, its protocol and the expected results. The tutorial is presented by the activity coordinators as agreed.

- **Tutorial 2 (5 hours): Design of the panel and preparation of the theme for the panel.** Five professors in unison meet with the students in each tutoring group to specify the design and characteristics of the theme chosen for each of the panels.

- **Tutorial 3 (5 hours): Supervision session of panel activity work.** As in the previous case, the same five teachers meet in each tutoring group to monitor the work of the panel. The students show their proposal and how they are going to manage the chosen topic.

- **Tutorial 4 (5 hours): Supervision session of panel activity work.** With a structure similar to the previous case, the five professors meet in each tutorial group to specify the final result of the panel that will be presented at the final conference of the subject.

- **Tutorial 5 (4 hours): Presentation session of the panels.** In this session the students freely discuss with the teachers (in this case they behave as evaluators) the content of the panels.

3. Electronic tutorials.

Students and teachers will be in contact by means of electronic media. Students can direct specific queries to teachers at any time through the university virtual platform and teachers will use the platform to communicate any schedule change or unexpected events.

4. Student autonomous work

All the work the student spends in subject preparation, apart from attendance to lectures, seminars,

tutorials and exams. It may include exercises through Aula Virtual. It includes various activities: the hours of study to be spent each week to expand and consolidate the knowledge acquired in the classroom, additional work that the teacher can plan throughout the semester to complement the lectures, as the reading of popular science books and the preparation of conference reports mentioned above. Given the variety of such activities, their interaction with the course subject and the importance for evaluation, this course gives special prominence to student¿s autonomous work.

Note on language use: Although a basic linguistic profile (Spanish, Valencian) is assigned to each group, activities organized in common for all groups (attending conferences, reading workshop, etc.) and occasional activities by invited teachers may have different linguistic profile. Therefore students, regardless of the profile of their choice, should be prepared to attend activities in Valencian, Spanish and English.

Note on credit recognition: Due to the teaching/learning methodology used, this subject is designed with a higher than average percentage of dedication to autonomous work, specifically 75% as stated in the Verification document of the degree in Biology. Therefore, the actual hours of non-face-to-face work are 112, instead of the 90 that appear in section 7 of this guide, the maximum number of non-face-to-face hours allowed by the application.

EVALUATION

Based on the different activities described in the methodology section, continuous evaluation of students will be developed, assessing attendance to all classroom activities, including examinations, the preparation and presentation of all tasks and complementary activities, participation and the degree of involvement in the teaching-learning process. In general, attendance to group tutorial sessions and conferences is mandatory. The unexcused absence or inappropriate behaviour may result in a penalty in the overall rating of the course at the discretion of the tutors. **The final mark to pass this subject has to be equal to or greater than 5 point on a 10 points scale.**

Specific aspects to assess are:

1. Objective test on the contents of the course including theoretical and practical issues. The qualification of this test will represent 40% of the final grade. Special emphasis will be given to the understanding of basic concepts for the development of their biological training and for the achievement of overall objectives of the course. The test will be common to all students of the subject independently of the group to which they belong. The test must be overcome with 5 out of 10 points.

2. Readings and lectures (50% of the final grade):

a. **Evaluation of the reading report: 15% of the final grade.** The evaluation of this activity will allow assessing the capacity for analysis, criticism and synthesis of popular science texts. It will be necessary to participate in a group tutorial as a colloquium in which participation will be assessed. The evaluation of this activity can include complementary readings depending on the chosen text, questionnaires, and exercises to be carried out in connection with the corresponding tutorial. Each text may require different activities.

b. Lectures activity: 15 % of the final grade. The evaluation of this activity will assess the ability to correlate biological knowledge in the context of present science and the capacity to transmit scientific information. Attendance to conferences will be mandatory. Students cannot present conference reports if they did not attend the conference. The first conference work will be supplemented by a group tutorial session in which students will discuss with professors the content of the conference reports, how to deal with this type of activity and its assessment.

c. Other activities: 20% of the final grade. Tutorials 1, 3 and 4 allow the completion of questionnaires. Online tests will be assembled the Virtual Classroom.

3. Work and presentation evaluation. Evaluation of interdisciplinary seminar on a poster format that will represent **10% of the final grade**. The evaluation of this activity will check the ability to obtain scientific information and to establish criteria to assess its validity, the ability of dissemination of scientific knowledge, the ability to teamwork and the ability for oral and public presentation. **Presentation of the poster in English will be highly valued and may involve an extra credit of up to 10%.** The evaluation of this activity will be coordinated and unique for the entire course.

NOTE 1: It is important to note that although students attend the same group for most of their activities and are primarily tutored by teachers from this group, teachers of this subject act in a coordinated manner and some activities can be organized and evaluated by teachers outside the assigned group. In this sense, see also the 'Note on linguistic profile" in the Methodology section.

NOTE 2: Students have two calls each course in which to qualify for paragraph 1 (objective test). However, other activities can only be qualified during the course itself and are not susceptible of a second call. The teaching team will give all facilities to students that, due to work or illness reasons, properly justified, cannot attend a mandatory classroom activity. However, such measures should be considered exceptional. It is the student's responsibility to notify to their teachers these special situations adequately and, if possible, in advance, and they will be assessed in committee, on an individual basis and in a non-binding way. However, neglecting attendance at tutorials, conferences or exams, delivery of work, monitoring of grades and in general any commitment that marks the calendar of the subject will be interpreted as lack of interest on the part of the student and will generate penalty on the final grade, being able to contribute to a bad evaluation, even to the suspense.

For these activities, assistance excuses will be accepted solely for the following reasons:

(a) illness of the student or serious illness of a member of the student's family. Supporting medical note required.

(b) Death of a member of the student's family. Explanatory documentation required.

(c) travels organized by subjects of the school itself and upon notification by the corresponding subject degree and when this activity corresponds to subjects programmed into the curriculum required of the student.

(d) assistance to sports on students subject to high performance sports programs or tests belonging to the University team. Explanatory documentation required.

(e) legal or judicial subpoena. Explanatory documentation required.

(f) time incompatibilities arising due to work compatibility. Explanatory documentation required.

(g) in the case of conferences, it will be considered the extreme difficulty in understanding Valencian language as a cause of exemption from the corresponding work. Applicable only to students who have received pre-university training out of Valencia, and then cannot follow any conference in that language. They have the obligation to attend the Conference. Then they will be assigned an alternative Conference which prepared the work and this will be evaluated.

(h) any other reason deemed acceptable by the teachers may be subject to evaluation in this section. In any case a justified excuse does not relieve the student of their obligation to comply with the activity, but prevents the consideration of lack of participation. Any management concerning the replacement for alternative activities or recovery of commitments shunned by students must be initiated by the student concerned and should not expect that the teacher cares for each case individually. The lack of response by the teaching staff should not be understood as acceptance. You will be positively valued any action to resolve the case before failure occurs.

NOTE 3: The qualification of ¿not evaluated¿ will be considered only when the student has participated in none of the activities of the subject. Therefore, this qualification will not be applied to students who do not attend the objective test if they have presented other works.

NOTE 4: Utmost honesty is expected from the students of this university in performing work that is always considered original. Special mention should be given to the copying or reproduction of alien text in the work done by students. The easy access to materials and information on the Internet is a great advantage but also pose a problem if these materials are reproduced verbatim ("copy / paste"). Some electronics tools are

available to the teaching staff of the Faculty in order to track this type of behaviour. Since these activities not only affect the reputation of the student, but they are illegal and affect the whole of the University, and may even be subject to severe sanctions that go beyond the framework of the evaluation of the subject.

NOTE 5: according to the rules of the university to apply for advance notice of a subject, they should have performed the mandatory activities that are specified in the teaching guide of the subject. Students wishing to benefit from the rules in advance of call that for the purposes of this course reading activities, conferences, other exercises and interdisciplinary work are considered "mandatory". Be warned.

NOTE 6: The exercises and other materials such as chips readings and lectures will be delivered by electronic tasks through Virtual Classroom. Please maximum attention to the instructions and warnings issued through this platform. Late deliveries will not be accepted.

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