

Life and Evolution

Code: 106223
ECTS Credits: 6

Degree	Type	Year	Semester
2504235 Science, Technology and Humanities	FB	1	2

Contact

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Use of Languages

Principal working language: spanish (spa)
Some groups entirely in English: No
Some groups entirely in Catalan: No
Some groups entirely in Spanish: Yes

Teachers

Antoni Barbadilla Prados

Prerequisites

It is convenient that the student review general concepts studied in the Biology course at high school.

Objectives and Contextualisation

Biological diversity reflects a history that dates back to a period close to the formation of the Earth. The explanation for this biodiversity is found in the study of biology as a life science.

This course will provide the basic knowledge about life, starting with the origin of life on Earth. We will explain the different levels of organization of life and the concepts to know how and why they appear, how occurs the evolution of the species and the diversity we currently find on Earth.

The basis that the course Life and Evolution will provide are is essential to know the origin and evolution of organisms, as well as for the follow-up of some of the optional subjects that are included in the Degree, which is why this subject is taught in the first semester and the first year of the Degree.

Competences

- Explain the basic concepts related to life, its origin and evolution, especially those referring to health and illness throughout history.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.

Learning Outcomes

1. Analyse and interpret the development, growth and biological cycles of living beings.
2. Analyse the mechanisms that generate biological diversity and interpret their adaptive significance and the mechanisms that maintain this diversity.
3. Describe and identify the different levels of organisation of living beings.

4. Describe the structure of the various parts of a cell and their functioning.
5. Develop a historical view of biology.
6. Identify results in the field of life sciences that lie behind knowledge at the forefront of these disciplines.
7. Interpret the mechanisms of heredity and the causes and effects of its modification.

Content

Block I

1. What is life? Levels of biological organization.
2. Molecules of life.
3. Cell structure and function.
4. Genetics and inheritance.
5. Reproduction and development.
6. Evolution and natural selection.
7. Definition of biological species.

Block II

8. Diversity of living organisms.
9. Unicellular organisms. Prokaryotes. Protists.
10. The origin of eukaryotes.
11. Evolution of the main taxonomic groups.
12. Plant organisms. Plants.
13. Animal diversity.

Methodology

The methodology used in this course to achieve the learning process is based on student work with available information. The function of the professor is to give the information or indicate where student can get it, helping and supervising the student during the learning process. To achieve this goal, the course is based on the following types of training activities:

Theoretical classes

The contents of the Theory program are taught by the professors. Lessons are supported by multimedia sources (Powerpoint format), which include at the beginning of each lesson an index with the most important points that are developed in each topic.

The presentations will be available in the Moodle classroom web for students to download and to use them as a basis for taking notes during the classes.

Students are advised to regularly consult the books recommended in the basic bibliography of the subject to consolidate and clarify, if necessary, the contents explained. In addition, it will also be recommended to consult the links that will be made available through the Moodle classroom of the Virtual Campus.

Seminars

During the seminars, students work in the scientific and technical knowledge exposed in the lectures to complete and deepen their understanding, developing various activities: analysis and discussion of videos on zoological topics, resolution of issues related to the topics discussed, analysis of zoological information, etc.

Some of the seminars will be talks given by scientists specializing in a topic related to the course.

The aim of the seminars is to promote the capacity for analysis and synthesis, critical reasoning and the capacity to solve problems.

Tutorials

The objective of these sessions is to solve doubts, to review basic concepts not explained in classes and to guide about the sources consulted by the students. The schedule of individualized tutorials is specified with the professor through the virtual campus. It is recommended to do at least one group tutoring before each of the exams, for the resolution of doubts.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Seminars	16	0.64	2, 1, 3, 4, 6, 7
Theory lessons	33	1.32	2, 1, 3, 4, 5, 6, 7
Type: Supervised			
Tutorials and supervision of work	4.25	0.17	2, 1, 3, 4, 5, 6, 7
Type: Autonomous			
Bibliography search	6	0.24	2, 1, 3, 5, 6, 7
Readings	8	0.32	2, 1, 3, 7
Resolution of exercises and preparations of task	37.75	1.51	1, 5, 6, 7
Study	40	1.6	2, 1, 3, 4

Assessment

There is a continuous evaluation process throughout the course that includes more than three evaluation activities, of different typologies, distributed throughout the course, and none of the activities represents more than 50% of the final grade.

On carrying out each evaluation activity, lecturers will inform students (on Moodle) of the procedures to be followed for reviewing all grades awarded, and the date on which such a review will take place.

The evaluation system is organized into 4 evaluation activities, each assigned a specific weight in the final grade:

- Evaluation of tasks of part I. Overall weight of 25%
- Evaluation of tasks of part II. Overall weight of 25%.
- Written exams: Two partial exams and a final recovery exam (or to improve the grade). The tests are combined, and consist of questions written answers, problem solving and test type. This section will have a global weight of 50%. The first partial will have a weight of 25% and the second of 25% of the overall score. To pass the subject you must reach a minimum grade of 4.0 in each of the exams and the average of the marks of both partials must be ≥ 4.0 to make the average with the other evaluative activities.

The course is considered passed if the final grade is ≥ 5.0 .

Students who, having passed the partial tests of theory, want to improve their qualification may choose to take a specific final test for the whole course. This test will be different from the recovery test. The mark of the final test will be the one that will prevail.

Plagiarism: In the event of a student committing any irregularity that may lead to a significant variation in the grade awarded to an assessment activity, the student will be given a zero for this activity, regardless of any disciplinary process that may take place. In the event of several irregularities in assessment activities of the same subject, the student will be given a zero as the final grade for this subject.

Not assessed: Students will obtain a "Not assessed/Not submitted" course grade unless they have submitted more than 30% of the assessment items.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Evaluation of tasks in seminars of part I	25%	1	0.04	2, 1, 3, 4, 6, 7
Evaluation of tasks in seminars of part II	25%	0	0	2, 1, 3, 4, 5, 7
Partial exam I	25%	2	0.08	2, 1, 3, 4, 7
Partial exam II	25%	2	0.08	2, 1, 3

Bibliography

Alberts B., Bray D., Hopkin K., Johnson A., Lewis J., Raff M., Roberts K., Walter P. (2011). *Introducción a la Biología Celular*. 3ª Edición. Editorial Médica Panamericana. Disponible en UAB-BIBLIOTECA DIGITAL: <http://www.medicapanamericana.com/visorebookv2/ebook/9786079356934>

Alberts B., Bray D., Hopkin K., Johnson A., Lewis J., Raff M., Roberts K., Walter P. (2013). *Essential Cell Biology*. 4th Edition. Editorial: Garland Science.

Barton N.H., Briggs D.E.G., Eisen J.A., Goldstein D.B., Patel N.H. (2007). *Evolution*. Cold Spring Harbor Laboratory Press, New York.

Carrión J.S. (2003). *Evolución vegetal*. DM. Murcia.

Hickman C.Jr., Keen S., Larson A., Eisenhour D., l'Anson H., Roberts L. (2020) (última edición: 18ª edición). *Integrated Principles of Zoology*. McGraw-Hill Education, Washington, EEUU. Disponible en UAB-BIBLIOTECA DIGITAL: http://www.ingebook.com/are.uab.cat/ib/NPcd/IB_Escritorio_Visualizar?cod_primaria=1000193&libro=4152

Klug W.S., Cummings M.R., Spencer Ch.A., Palladino M.A. (2013). *Conceptos de Genética*. 10a edición. Pearson Educación, S.A., Madrid. Disponible en UAB-BIBLIOTECA DIGITAL: http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=3936

Miller S.A., Harley J.H. (2015). *Zoology*. Editorial MacGraw-Hill. 10ª edición (referencia en biblioteca UAB: 59 Mil).

Pierce B.A. (2016) *Genética. Un enfoque conceptual*. 5a edición. Editorial Médica Panamericana, Madrid.

Raven H., Evert R.F., Eichhorn S.E. (1999). *Biología Vegetal*. Ediciones Omega.

Stearns S.C., Hoekstra R.F. (2005). *Evolution. An Introduction*. 2nd. Edition. Oxford University Press.

Willis K.J., McElwain J.C. 2002. *The Evolution of Plants*. Oxford University Press. Oxford.

Recursos Web

Animal Diversity Web (University of Michigan): <https://animaldiversity.org/>

Discover Life: <https://www.discoverlife.org/>

The Shape of Life. The Story of the Animal Kingdom (Sea Studios Foundation): <https://www.shapeoflife.org/>

Talk Origins: <http://www.talkorigins.org/origins/outline.html#outline>

Understanding Evolution: <https://evolution.berkeley.edu/evolibrary/resource/library.php>

Software

No specific software is required.