

Degree	Type	Year
2504235 Science, Technology and Humanities	FB	1

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Teaching groups languages

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Prerequisites

It is convenient that the student review general concepts studied in the Biology course at high school. In case the student have not completed the scientific high school curriculum, it is recommended to consult the bibliography of this course guide for basic introductory biology references.

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. The origin of eukaryotes. Protists.
10. Evolution of the main taxonomic groups.
11. Plant organisms. Plants.
12. Animal diversity.

Activities and Methodology

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

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.

Assessment

Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
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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%	1	0.04	2, 1, 3, 4, 5, 7
Partial exam I	25%	1.5	0.06	2, 1, 3, 4, 7
Partial exam II	25%	1.5	0.06	2, 1, 3

ASSESSMENT

To pass the course, a minimum mark of 5 points out of 10 possible is required from the sumatori of theory exam + seminars.

ATTENTION Attendance to the seminars is mandatory. Non-attendance to seminars without justification will imply that the student will NOT be able to pass the subject.

1- CONTINUOUS ASSESSMENT

The programmed continuous assessment activities are:

1.1- THEORY

Partial theory exams: Each of the two partial exams will represent 25% of the final grade and will assess the acquired knowledge during the course, as well as analytical and synthesis skills, and critical reasoning. The exam may include multiple-choice questions, short-answer questions, conceptual questions, or schemes.

- To obtain the average of the two partial exams, the minimum grade for each exam must be equal to or higher than 5.0. If the student obtains a grade lower than 5.0 in a partial exam, student will be allowed to re-assess that examen on the day of the recovery exam. In the case of the exam was not re-assessed, the average cannot be calculated with the rest of the course activities.

Re-assessment of theory exam: This exam will be used to re-assess the necessary partial exams.

- To re-assess an exam, the student must have been evaluated in a set of activities equaling at least at least two-thirds of the total evaluation activities of the course.
- For the theory, to be averaged with the seminar activities, the average of the two partial exams must be equal to or higher than 4.0.
- Students who wish to improve a grade in one or both parts can do the final exam, but they will lose the previous grade.

1.2- SEMINARS

Seminar assignments (questions) that must be presented on the days of the seminar, and the evaluative tests (groups and individuals) that are conducted during the seminar classes will be assessed. The grade corresponding to the seminars of each of the two blocks of the course will represent 25% of the grade, being in total 50% of the final mark of the subject.

- Attendance to seminars is mandatory.
- This activity cannot be re-assessed.
- For the seminars, to be averaged with the theory, the average seminar mark must be equal to or higher than 4.0.

SUMMARY TABLE OF THE WEIGHT OF EACH COMPONENT:

1st partial theory exam (Part I)	25%
2nd partial theory exam (Part II)	25%
Seminars (Part I)	25%
Seminars (Part II)	25%

1.4- OTHER CONSIDERATIONS

- To pass the course, the final grade must be equal to or higher than 5.0.
- **NO ASSESSMENTS**: It is considered as not assessed the students who carry out less than 50% of the assessment activities described above.
- For students who do not pass the theoretical part of the course but pass the part of seminars (obtaining a minimum of 5 points out of 10), this mark will be kept for a three additional registration periods (but student will have to register for the ENTIRE course again).
- The students who could not attend an individual assessment test for justified reasons (such as a health problem, death of a family member, accident, have the status of elite athlete and have a competition or sports activity with compulsory attendance, etc.) and provide the official documentation corresponding to the professor and the coordination of the degree (official medical certificate stating the incapacity to take an exam, police certificate, justification of the competent sports body, etc.), will have the right to take the test in a later date. The coordination of the degree will ensure for the concretion of this test, after consulting with the professor of the course.
- Students who cannot attend an individual evaluation test for reasons not mentioned previously (for example, they are taking other subjects in Madrid) must give notice at least two weeks before the date of the evaluation test in order to arrange the exam at the UAM. Failure to communicate by the student will result in the failure of the test.
- **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.

2- SINGLE ASSESSMENT

The students who choose the single-assessment option must request it within the terms and forms indicated by the Faculty.

2.1- THEORY

This part represents 50% of the final grade of the course, and will be evaluated through:

Unique theory exam: The unique theory assessment will consist of an exam that will take place on the day of the 2nd partial exam of the course. The exam may include multiple-choice questions, short-answer questions, conceptual questions, or schemes.

Re-assessment of theory exam: The recovery of the single assessment will be the same day and time that the continuous assessment recovery test.

- To re-assess an exam, the student must have been evaluated in a set of activities equaling at least at least two-thirds of the total evaluation activities of the course.

- For the theory, to be averaged with the seminar activities, the grade of the exam must be equal to or higher than 4.0.
- Students who wish to improve the grade of the exam can do the re-assessment exam, but they will lose the previous grade.

2.2- SEMINARS

IMPORTANT: Even if students choose the unique evaluation, they will have to present tasks equivalent to the seminars of the two blocks of the course.

Seminars will be evaluated through works that must be delivered. The list of tasks to be done will be given on the day of the 2nd partial test of the subject. The assignments must be submitted to the course's virtual campus no later than the day of the re-assessment of theory exam. The grade corresponding to the seminars of each of the two blocks will represent 25% of the final grade of the subject, being a total of 50%.

- This activity cannot be re-assessed.
- For the seminars, to be averaged with the theory, the average seminar mark must be equal to or higher than 4.0.

SUMMARY TABLE OF THE WEIGHT OF EACH COMPONENT:

Unique theory exam	50%
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Seminars	50%
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2.4- OTHER CONSIDERATIONS

- To pass the course, the final grade must be equal to or higher than 5.0.
- For students who do not pass the theoretical part of the course but pass the part of seminars (obtaining a minimum of 5 points out of 10), this mark will be kept for a three additional registration periods (but student will have to register for the ENTIRE course again).
- The students who could not attend an individual assessment test for justified reasons (such as a health problem, death of a family member, accident, have the status of elite athlete and have a competition or sports activity with compulsory attendance, etc.) and provide the official documentation corresponding to the professor and the coordination of the degree (official medical certificate stating the incapacity to take an exam, police certificate, justification of the competent sports body, etc.), will have the right to take the test in a later date. The coordination of the degree will ensure for the concretion of this test, after consulting with the professor of the course.
- Students who have passed the theory part and have a grade of 4.0 or higher in the seminar parts may take the recovery exam to improve their grade. To be eligible, they must formally renounce (via email) the previous grade, notifying the responsible professor of the course at least three days before the re-assessment exam. The theory grade that will be considered is the one obtained in the most recent exam taken by the student.
- Students who cannot attend an individual evaluation test for reasons not mentioned previously (for example, they are taking other subjects in Madrid) must give notice at least two weeks before the date of the evaluation test in order to arrange the exam at the UAM. Failure to communicate by the student will result in the failure of the test.
- 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.

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

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Hickman C.Jr., Keen S., Larson A., Eisenhour D., l'Anson H., Roberts L. (2020) (última edició: 18a edició). *Integrated Principles of Zoology*. McGraw-Hill Education, Washington, EEUU. Disponible en UAB-BIBLIOTECA DIGITAL: https://bibcercador.uab.cat/permalink/34CSUC_UAB/1eqfv2p/alma991010766125406709

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

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

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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.

Web sources

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/resourcelibrary.php>

Software

No specific software is required.

Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	1	Spanish	second semester	morning-mixed
(TE) Theory	1	Spanish	second semester	morning-mixed