COURSE GUIDE

Biology

1st Year

Academic Year 2025-2026

Course of the Subject: Biology

		ECTS
SUBJECT: Biology		6
Module: Scientific Foundations		12
Type: Compulsory	**CURSO**: 1º **Semestre**: 1º	
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MODULE ORGANIZATION

BIOLOGY	ECTS 6
Duration and location within the study plan: It is part of the "Scientific Foundations" module, which consists of 12 ECTS credits and contains two subjects: Biology, is offered in the 1st semester of the 1st year; Neuroscience, is offered in the 2nd semester of the 1st year.	

Subject Matter and Subjects

Subject Matter	ECTS	Subject	ECTS	Year/ semester
Biology	6	Biology	6	1/1
Psychology	6	Neuroscience	6	1/2

BASIC AND GENERALCOMPETENCIES	Weighting			
	1	2	3	4
1. Organization and planning			X	
2. Basic computer skills			X	
5. Interpersonal skills			X	
6. Intra- and interdisciplinary team work		X		
11. Ability to learn and teach			X	
12. Ability to adapt to new situations and generate new ideas				X

SPECIFIC COMPETENCIES	Weighting			
	1	2	3	4
17. To be able to pose philosophical questions				X
18. To be able to relate different philosophical topics			X	
21. To become acquainted with some central paradigms of scientific thinking		X		
23. To write philosophical essays and show evidence of analytical and synthetic skills			X	
25. To be able to understand and evaluate philosophical arguments			X	
34. To know and assess scientific methodologies in their different scopes	X			

LEARNING OUTCOMES	COMPETENCIES
RA1. That students rediscover the feedback relationship between philosophy and science	**CG:** 2 **CE:** 34
RA2. That students understand the relationship of philosophical anthropology with biology and neuroscience	**CG:** 12 **CE:** 25
RA3. That students knows the basic concepts of biology	**CG:** 11 **CE:** 17, 34
RA4. That students take into account and reason of the most influential scientific paradigms	**CG:** 1, 5, 6 **CE:** 18, 21, 23

LEARNING ACTIVITIES THROUGH SYNCHRONOUS COMMUNICATION			
ACTIVITY	**Teaching-Learning Methodology**	**Relation to Learning Outcomes**	**ECTS [1]**
VIRTUAL SESSION	Presentation of the content by the teacher, analysis of competencies, explanation and demonstration of skills, abilities and knowledge in the virtual classroom.	1, 2, 3, 4	0,7
PRACTICAL SESSION	Group work sessions through chat moderated by the teacher. Case studies, both true and fictitious, for the construction of knowledge through the interaction and activity of the student, critical analysis of values and social commitment.	1, 2, 3, 4	0,3
SEMINAR AND VIDEO-CONFERENCE	Monographic sessions throughout the course, oriented to current aspects and applications of the subject.	3, 4	0,2
VIRTUAL EVALUATION	Set of written or oral tests, used in the initial, formative or summative evaluation of the student.	1, 2, 3, 4	0,1
		TOTAL	**1,30**

[1] La asignatura y/o materia se organiza en **DOCENCIA VIRTUAL** y en TRABAJO AUTÓNOMO DEL ALUMNO, con un porcentaje estimado en ECTS. Una adecuada distribución es la siguiente: **40%** para las Actividades Formativas **DOCENCIA (60 horas)** y 60% para las de Trabajo Autónomo tutorizado (90 horas) para **una asignatura de 6 créditos.**

LEARNING ACTIVITIES THROUGH ASYNCHRONOUS COMMUNICATION			
ACTIVITY	**Teaching-Learning Methodology**	**Relation to Learning Outcomes**	**ECTS**
INDIVIDUAL ACTIVITIES	Preparation of the final evaluation: student study, individual preparation of readings, essays, problem solving, assignments, reports, etc. for discussion or delivery in electronic format.	1, 2, 3, 4	2,3
INDIVIDUAL TUTORSHIP	Individual attention for monitoring and guidance of the learning process, carried out by a tutor with the aim of reviewing and discussing the materials and topics, seminars, readings, carrying out assignments, etc.	1, 2, 3	0,1
CONTINUOUS EVALUATION ACTIVITIES	**Group work**: group preparation of readings, essays, problem solving, seminars, papers, reports, etc. for discussion or delivery. **Discussion forums**: participation and contributions to discussion forums related to the subject, moderated by the professor of the subject. Resolution of problems, comments, reports to deliver in installments throughout the course, making videos individually or cooperatively, answering questionnaires.	1, 2, 3, 4	2,3
		TOTAL	**4,70**

EVALUATION SYSTEM FOR THE ACQUISITION OF COMPETENCIES AND GRADING SYSTEM		
Evaluation Instrument	**EVALUATED LEARNING OUTCOMES**	**Granted percentage**
Attendance and participation in synchronous communication activities	1, 2, 3, 4	10%
Carrying out deliverable activities and Periodic evaluation through questionnaires	1, 2, 3, 4	40%
Final Evaluation	2, 3, 4	50%
The use of AI is not permitted in this subject.		

CONTENTS DESCRIPTION	COMPETENCIES
Part I: Scientific Biology • The science of life • Biomolecules and the cell • From DNA to proteins • Genetics and genomes • Evolution Part II: Philosophy of Biology • Introduction to the philosophy of biology • Frames of interpretation of the phenomenon 'life' • From philosophical to biological anthropology • The organism and the vital tone • Human life	**CG:** 5, 6, 11, 12 **CE**: 17, 18, 21, 23, 25

BIBLIOGRAPHY

- Powerpoint presentations, and course lessons (Biology) by Carmen Fagoaga and Alfredo Esteve. Also some accompanying videos available in the subject moodle platform and virtual class.
- Morcillo, G. y Portela I. (2010). *Biología básica.* Madrid: Editorial Sanz y Torres.
- Curtis, Barnes, Schnek, Flores, (2006). *Invitación a la Biología*. Buenos Aires: Editorial Panamericana.
- Diéguez Lucena, A. (2012). *La vida bajo escrutinio. Una introducción a la filosofía de la biología*. Barcelona: Buridan.
- Godfrey-Smith, P. (2022). *Filosofía de la biología*. Madrid: Bauplan.

Bibliografía Complementaria:

- McFadden J. and Al-Khalili J. (2019). *Biología al limite*. Barcelona. Editorial RBA.
- Novo J. (2011). *Genes, microbios y células.* Barcelona: Editorial RBA.
- Ayala F. J. (2001). *La Teoría de la Evolución. De Darwin a los últimos avances de la Genética*. Madrid: Temas de Hoy.
- National Academies of Science (2008) *Science, Evolution and Creationism*. Washington D.C.: The National Academies Press. Hay una versión digitalizada en: http://www.nap.edu/catalog/11876.html
- Freeman, S. Quillin, K. and Allison, L. (2014). *Biological Science*. USA: Pearson Education.
- Gutiérrez Lombardo, R. (2008). *Filosofía y biología. Reflexiones de un biólogo evolucionista*. Ciudad de México: Centro de Estudios Filosóficos, Políticos y Sociales Vicente Lombardo Toledano.
- Jonas, H. (2000). *El principio vida. Hacia una biología filosófica*, Madrid: Trotta.
- Laín Entralgo, P. (1991). *Cuerpo y alma*. Madrid: Espasa Calpe.
- Zubiri, X. (1986). *Sobre el hombre*. Madrid: Alianza Editorial & Sociedad de Estudios y Publicaciones.

TEMPORAL ORGANIZATION OF LEARNING		
	CONTENT BLOCK/DIDACTIC UNIT	**NR. OF SESSIONS**
1. The science of life	1.1. What is life? 1.2. The origin of life 1.3. Main transitions in the history of life 1.4. Characteristics of living beings 1.5. Unity and Diversity of the living world 1.6. Model species in biotechnology research	1
2. Biomolecules and the Cell	2.1. Biomolecules 2.2. Monomers and Macromolecules 23. Water. Properties 2.4. Cell organization 2.5. Cell types 2.6. Cell cultures 2.7. Mother cells	2
3. From DNA to proteins	3.1. Structure of genetic material 3.2 Chromosomes 3.3 Types of RNA 3.4 Replication, Transcription and Translation 3.5 The genetic code 3.6 Cell reproduction	1
4. Genetics and Genomes	4.1 Basic concepts 4.2 Genetic inheritance 4.3 Mendel's laws 4.4 Genomes 4.5 The Human Genome Project (HGP) 4.6 Genomics and other omics disciplines	1
5. Evolution	5.1 The Darwinian revolution and the synthetic theory 5.2 Evidence for biological evolution 5.3 Evolutionary change: mechanisms and consequences 5.4 The evolution of hominids 5.5 Current spread of evolutionary theory	2
6. Introduction to the philosophy of biology	6.1. The consolidation of biology as a science 6.2. Origin and history of the philosophy of biology	1
7. Interpretation frameworks of the phenomenon 'life'	7.1. Animism 7.2. Dualism 7.3. Monism 7.4. Organicism	2
8. From philosophical to biological	8.1. From philosophical to biological anthropology.	2

anthropology	a. Stages of anthropology b. The evolutionary debate 8.2. The marriage between the philosophical and the biological issues. a. Max Scheler (1874-1928) and the life of the spirit b. The anthropobiology of Arnold Gehlen (1904-1976) c. Xavier Zubiri (1898-1983): person and reality	
9. Human life	9.1 The living being a. What is an organism b. The vital tone and its formalization 9.2 The 'intelligent feeling' a. The homeostatic process b. Animal habits (or pure feeling) c. Opening to reality	3