COURSE DATA

DATA SUBJECT

Code: 36856
Name: History of Biology
Cycle: Undergraduate Studies
ECTS Credits: 4.5
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1106 - Degree in Biology	Facultat de Ciències Biològiques	4	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1106 - Degree in Biology	Optatividad	ELECTIVES

COORDINATION

GUILLEM LLOBAT XIMO

SUMMARY

"History of Biology" is an elective course in the fourth year of the Biology Bachelor's Degree program. It is worth a total of 4.5 ECTS credits and is taught during the first semester.

The course uses history as a foundation to contribute to students' education in the fields of biological science education and scientific communication, thereby developing essential skills required in many of the career paths available to biology graduates. Historical analysis grounded in the social and epistemological studies of biology enables students to acquire a more mature and comprehensive understanding of what the biological sciences are today and allows us to critically evaluate the limitations and opportunities within this scientific field. It thus provides us with useful tools for teaching and communication, as well as for research. It does so by identifying the complex relationships between the biological sciences and the political, economic, cultural, and social contexts in which they are carried out, and by fostering a reflective and critical attitude toward the social uses of science and technology. It also does so by identifying some of the fundamental elements of scientific practice (instruments, spaces, experiments, controversies, etc.) and subjecting them to critical evaluation.

Without neglecting the analysis of the processes by which knowledge is produced, the course will focus particularly on the communication or circulation of that knowledge, both amongst specialists and between them and the scientific public. The importance of communication – which has often been overlooked – will

be highlighted, and the major models of science communication will be presented.

Students will read and analyse classic texts from the history of science, engage with material sources and exhibitions, and analyse the ethical dilemmas and social debates arising from the findings of contemporary biology and its medical and industrial applications.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

COMPETENCES / LEARNING OUTCOMES

1106 - Degree in Biology

(CB3) 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.

(CB4) Students must be able to communicate information, ideas, problems and solutions to both expert and lay audiences.

Assimilate the historical process of construction of scientific knowledge.

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.

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.

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

DESCRIPTION OF CONTENTS

Theory sessions (24 hours)

1. Introduction to the historiography of biology and the major periods in the history of biology

2. Scientific methodology: from Francis Bacon to Paul Feyerabend

3. The sites of the biological sciences: scientific academies, botanical gardens and cabinets of curiosities

4. The circulation of knowledge: scientific expeditions

5. Scientific instruments: the microscope

6. Crucial experiments: Pasteur versus Pouchet in the controversy over spontaneous generation

7. Models of scientific change: the Darwinian revolution

8. Model organisms: Drosophila melanogaster

9. Scientific disciplines: Biochemistry

10. Scientists: The scientific career and gender biases at the CSIC and the University of Valencia

11. Science audiences: the origins of modern environmentalism

12. Big Science: The Human Genome Project

Practical sessions (21 hours)

1.- Teaching project presentation sessions (7 hours)

2.- Science communication in the daily press (3 hours)

3.- The science documentary (2 hours)

4.- Science museology (2+5 hours)

5.- The textbook (2 hours)

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	21,00
Theory	24,00
Total hours	**45,00**

NON PRESENCIAL ACTIVITIES

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

TEACHING METHODOLOGY

1. Theoretical sessions. These will take place before the practical sessions begin. They will consist of twelve topics, each lasting two hours. The first topic will provide a broad, chronological overview of the history of biology, to familiarise students with the main thematic areas and highlight the fundamental ideas that have characterised each period. The remaining eleven topics are structured around case studies set chronologically across various historical periods. During part of each session, the lecturer will present the core content. Students will also be provided with materials (texts, images, videos, etc.) and questions, enabling them to explore the topic in greater depth independently, followed by discussion with the lecturer. In this way, we aim to foster a more constructive and collaborative approach to classroom work. This work will take place in small groups and will serve as an initial preparation for the presentation to be given in a practical seminar, in which students will present a teaching project focused on one of the topics covered in the theoretical sessions.

2. Visit to a museum. Students will visit a museum related to the biological sciences. Following this visit, they will undertake an analytical assignment on the museum's exhibition project.

3. Science communication. To analyse this highly relevant aspect of scientific activity, we propose two types of practical assignments focused on the critical analysis of documentaries and news items published in the press.

4. The history of biology in teaching. Bearing in mind that some students may be interested in pursuing a career in secondary education in the future, the course will include a reflection on how the history of science – and biology in particular – is presented in textbooks. Through the aforementioned practical seminar and subsequent discussions, we will also reflect on the contribution of the historical and social studies of science to science education.

EVALUATION

(50%) Theory assessment

Exam. The exam will consist of one long-answer question and five reflection questions.

(30%) Practical work assessment

(10%) Group work. Students will have to choose a topic from the theory lessons and, based on this, produce a piece of work and present it in the form of an educational project during one of the practical seminar sessions for subsequent discussion with their classmates.

(5%) Museum. Report on the museum visit.

(10%) Analysis of a documentary and a newspaper article.

(5%) Analysis of textbooks.

(20%) Continuous assessment (participation, attitude and engagement)

In each activity, students' engagement in the resulting discussions will be assessed. 10% will be based on participation in these debates following the presentation of the teaching projects; for the other activities (museum visit, documentary, press article and textbook), participation will contribute 2.5% to the final mark for the activity.

To pass the module, students must achieve a final mark of 5 (out of 10) or higher. All activities must have been submitted.

REFERENCES

Basic

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- Bowler, P.; Morus, I.R. Panorama general de la ciencia moderna. Barcelona, Crítica, 2007.

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Complentary

- Acot, P. Historia de la ecología. Madrid, Taurus, 1990.

- Bowler, P. Evolution. The History of an Idea. Berkeley, University of California Press, 2009.

- Collins, H. M.; Pinch, T. The Golem: What You Should Know about Science. Cambridge, Cambridge University Press, 1993.

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- Martín Gordillo, M. (coord.). Controversias tecnocientíficas: diez casos simulados sobre ciencia, tecnología, sociedad y valores. Barcelona, Octaedro-OEI, 2006.

- Membiela, P. (ed.). Enseñanza de las ciencias desde la perspectiva ciencia-tecnología-sociedad: formación científica para la ciudadanía Madrid, Narcea, 2002.

- Morange, Michel. The Black Box of Biology. A History of the Molecular Revolution. Cambridge, Harvard University Press, 2020.

- Muñoz, E. Biotecnología y sociedad: encuentros y desencuentros. Madrid, Cambridge University Press, 2001.

- Nieto Galán, A. Cultura industrial. Historia y medio ambiente. Barcelona, Rubes Editorial, 2004.

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