# COURSE DATA

| Data Subject | |
|---|---|
| **Code** | 33042 |
| **Name** | Biology, university and society |
| **Cycle** | Grade |
| **ECTS Credits** | 6.0 |
| **Academic year** | 2022 - 2023 |

**Study (s)**

| Degree | Center | Acad. year | Period |
|---|---|---|---|
| 1100 - Degree in Biology | Faculty of Biological Sciences | 1 | Annual |

**Subject-matter**

| Degree | Subject-matter | Character |
|---|---|---|
| 1100 - Degree in Biology | 5 - Biology | Basic Training |

**Coordination**

| Name | Department |
|---|---|
| NOVELLA GAYA, ENRIC JOSEP | 225 - History of Science and Documentation |
| RADUAN RIPOLL, M ANGELES | 355 - Zoology |
| ROCA VELASCO, VICENTE | 355 - Zoology |

# SUMMARY

“Biologia, Universitat i Societat: estudiar i treballar en Biologia” is a compulsory course of the first year of the degree on Biology. It consists of 6 ECTS credits, taught during the first and second semester of the term. It is part of the Biology subject, of 18 credits, which is considered as basic training for undergraduates. The course contains two different parts: the first one deals with the basic knowledge in order to begin the degree and the second one tackles the history of biology.

The course is meant to facilitate the access of students to the academic, administrative, social and cultural spheres of the Universitat de València. Students will also learn about the professional opportunities of the degree. Moreover, they will be informed about the complex relationship between science and society and they will acquire the abilities to develop a reflexive and critical approach to science and technology and their social uses.

The course will contribute to understanding the concept of scientific knowledge, it will analyse the main stages in the development of the modern biology and will deal with the different models for the production of knowledge in the life sciences. It will also discuss the main controversies in present Biology.

Students will have to read several articles and a book connected to the contents of the course, they will analyse classical texts in the history of science and will get in touch with material sources and exhibitions. Students will also get involved in the ethical and social debates linked to present biology and to its medical and industrial applications. This will be done from an STS perspective.

One of the main objectives of the course is to help students to become part of the university life, and especially to get involved with the study of biology. This general objective will be accomplished by:

- Studying the structure and organisation of the Universitat de València, and especially of the Degree on Biology.

- Acquiring the knowledge to use correctly the services and sources offered by the institution, including those devoted to human resources and administrative and media services.

Due to the experimental nature of the studies on biology, students will also have to become sensible to the dangers they imply and to learn and obey the basic norms of hygiene and laboratory safety. Moreover, professional guidance is also one of the main objectives of the course. Therefore, students will be taught on how to choose their formative profile in accordance with their professional prospects. They will also learn the basic legislation for professional biologists.

Additionally, the course will also include other objectives such as:

- To analyse the concept of social and cultural systems and to consider biology among the various systems for the production of knowledge and techniques. Biology with thus be tackled in its relationship with society, economy and social values.

- To know more about the role played by scientists and science in modern societies.

- To analyse the main periods in the establishment of modern and early modern biology.

- To analyse and discuss the experimental method and its role in modern biology.

- To describe a general picture of the main lines in present biology and to evaluate its dimensions and trends.

- To analyse the relationship between the sciences of life and social values: their contributions, opportunities and controversies.

- To analyse the development of biology and its future prospects in the present context of globalisation.

# PREVIOUS KNOWLEDGE

## Relationship to other subjects of the same degree

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

## Other requirements

# COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

## 1100 - Degree in Biology

- Situar la Biología en el contexto de la ciencia a través del conocimiento de algunos de sus grandes temas y problemáticas en el mundo actual.
- Manejo de material para la experimentación en el laboratorio y en el campo.
- Conocer las normas de seguridad e higiene en el laboratorio.
- Manejo de recursos informáticos de utilidad en Biología.
- Conocer la legislación básica de la profesión del biólogo/a.
- Capacidad de análisis, síntesis, trabajo metódico y riguroso.
- Capacidad de análisis crítico de textos científicos.
- Manejo del inglés científico.
- Develop the capacity for organisation and planning.
- Capacidad de presentación escrita y oral de datos científicos.
- Capacidad de divulgación del conocimiento científico.
- Habilidad para el trabajo en equipo.
- Conocimiento y respeto de la diversidad cultural humana.
- Capacidad de valoración de los riesgos medioambientales y de las crisis de biodiversidad.
- Compromiso con la conservación y con el desarrollo sostenible.
- Compromiso con la defensa y práctica de las políticas de igualdad.
- Compromiso ético en el manejo de animales para experimentación.
- Compromiso ético en el ejercicio de la profesión de biólogo/a.
- Identificar relaciones entre la ciencia y la sociedad.
- Analizar los valores culturales implícitos en los saberes y prácticas de la ciencia.
- Asimilar la dimensión histórica del conocimiento.
- Asimilar el proceso de construcción del conocimiento científico.

- Analizar dilemas éticos derivados de la aplicación de la tecnología y de su uso social.
- Capacidad para divulgar la ciencia.

## LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

- To design the own curriculum with a view to the professional career.

- To identify and locate facilities and human, administrative, and informatics resources of the UVEG and to use them in pro to the personal benefit.

- To know and to obey the rules of lab safety as well the legal frame.

- To develop the capacity to organise and plan the personal work.

- To assimilate and critically analyse scientific information.

- To identify the relationships between science and society.

- To analyse the cultural values implicit in the scientific knowledge and practice.

- To assimilate the historical dimension of scientific knowledge.

- To assimilate the process of construction of scientific knowledge taking into accounts its relationships with society.

- To assimilate the origins and the construction of the experimental method.

- To interpret the ethical and social consequences of biological experimentation.

- To work in group

- To interact fluidly with the professorship and the rest of the staff working at the UVEG.

- To express personal opinions in a coherent and argued way.

- To obtain relevant scientific information in the field of biology having criteria to evaluate its validity

- To notice the relationship between the dynamics of science and social needs.

- To develop a personal position in relation to the ethical controversies associated to science and technology

- To design a scientific experiment.

## DESCRIPTION OF CONTENTS

### 1. University of València structure

Organisation of the Universitat de València: university, faculties, departments, ADR and representation of studentship.

### 2. Resources and facilities of the Universitat de València

Resources and facilities offered by the Universitat: DISE, CADE, SFP, CAL, Library, Sports, Health Care, Universitats website. Visit to the Science Library and location of a selected number of books belonging to the courses of the first year of the degree.

### 3. Structure of the Biology degree

Organization of the Degree in Biology. Plans of Studies, schedules, exams calendar. Virtual campus and e-mail. Group seminars to share current work comparing a number of syllabuses of other European universities.

### 4. Techniques of study and planning the personal work

Techniques of study and planning the personal work.

### 5. Biology and society

Biology and society

### 6. Biology as a profession

Biology as a profession. Introduction to biology as a profession, professional competences. Workshop of search for job offers. Results of a professional survey. Round table with professionals involved in different fields of biology.

### 7. Systems of knowledge about nature

Biological thinking in antiquity. The legacy of medieval science (4 hours of theory).

### 8. The transition to modernity

The Scientific Revolution. Collecting practices. Scientific expeditions. The Anatomical Renaissance. Harvey and blood circulation. (8 hours of theory).

### 9. The constitution of the contemporary biological sciences

From fixes to evolutionism. The cell theory. The laboratory and experimental biology. Louis Pasteur and microbiology. Claude Bernard and experimental physiology. Animal experimentation. The genetic. Ecology and environmentalism. (10 hours theory)

### 10. The methods of science

Scientific communication. The limits of science. The methods of science. The problem of induction. The normative structure of science. Science as meritocracy. The rhetoric of science. Technoscience. (8 theory hours).

### 11. Practical Sessions

1. Introductory session.
2. Biology and scientific museology.
3. Thematic sessions by groups (8 sessions).

## WORKLOAD

| ACTIVITY | Hours | % To be attended |
|---|---|---|
| Theory classes | 45,00 | 100 |
| Classroom practices | 10,00 | 100 |
| Tutorials | 3,00 | 100 |
| Computer classroom practice | 2,00 | 100 |
| Attendance at events and external activities | 4,00 | 0 |
| Development of group work | 10,00 | 0 |
| Study and independent work | 40,00 | 0 |
| Preparation of evaluation activities | 16,00 | 0 |
| Preparing lectures | 20,00 | 0 |
| **TOTAL** | **150,00** | |

## TEACHING METHODOLOGY

The process of learning involves some other activities:

**1. Theory sessions in the classroom:** one or two sessions every week where the lecturer presents and discusses the items noted in the programme (notice this point in this guide).

**2. Practices and seminars in the classroom:** a two hours session every week where students work with a variety of sources: scientific texts, photographic and cinematographic materials, scientific instruments,

texts of scientific popularization, or press articles.

**3. Reading and commentary** of a book chosen among a number of them suggested by the professor.

**4. Practical work of contact with historical and current sources of biology.** Visit to the sciences library in the Burjassot campus, exhibitions, museums, etc., as well as attendance at lectures related with the contents of the subject, which will be objects of seminars and/or working reports carried out by students.

**5. Tutorials.** Three sessions of one hour each one will be devoted to tutorials in the classroom, one of them corresponding to the points 1 to 6, and the two others to the rest of the subjec

**6. Attendance to round tabls** to complete the contents of the subject.

**7. Interdisciplinary seminars.** Transversal activity common to all the subjects coursed in the first year of the degree. It involves the production, exhibition and oral presentation of a poster about a specific biological point, performed by groups of three students, adopting the dynamics of the Biograd congress.

## EVALUATION

**The final mark will be calculated, based on the two parts of the courseplus the interdisciplinary work, as follows:**

**Part I. Incorporation, items 1 to 6: 25% of the final mark (2.5 points)**
The continuous evaluation will be carried out taking into account these elements:
- **attendance to on-site activities**, with a minimum required of 70% to pass the subject.
- **written works and active participation**, being compulsory to carry out all proposed works.

**Part II. History, items 7 to 11, and practical sessions: 65% of the final mark (6.5 points)**
**Exam on the theoretical contents of the syllabus, up to 3,5 points**
It may include questions of different kinds (multiple choice or requiring short and/or medium extension answers), which demand historical contextualization and critical thinking abilities related to the topics of the syllabus.

**Practical exercises, reading and analysis of texts, books and lectures and exhibition reports: up to 3 points**
Attendance, participation and attitude in the classroom will be considered, in addition to capacity to present and knowledge of the contents.

**Part III. Interdisciplinary work (poster) of the first year: 10% of the final mark (1 point)**

**Evaluation of the second exam:** If the student fails to pass the subject, a second opportunity will be given to re-test the exam. The same criteria will be adopted to pass the subject, being the History exam the only part re-evaluable, as the other activities are subjected to continuous evaluation during the year.

In order to pass the subject, at least a 40% of the maximum mark has to be reached in the Incorporation part, in the exam and in the practical exercises.

## REFERENCES

### Basic

- Camprubí i García, P. La profesión de biólogo. Madrid, Ed. Colegio Oficial de Biólogos, 1997.
- Hernández, R.; Corral, L.; Infante, F. 50 años de Biología en España. Conferencia Española de Decanos de Biología. Córdoba, Ed. Publicaciones Cajasur, 2002, (Fernández, J. Biología y sociedad en España 1952-2002, pp. 113-127 y Camprubí, P. La profesión de biólogo, pp. 149-159).
- Publicaciones del Servei de Seguretat, Salut i Qualitat Ambiental: http://www.uv.es/DSSQA/general/documentacio.html
- Barona Vilar, J.L. Història del pensament biològic. València, PUV, 2002.
- Fara, P. Breve historia de la ciencia. Barcelona, Ariel, 2009.
- Olivé, L. La ciencia y la tecnología en la sociedad del conocimiento: Ética, política y epistemología. México: F.C.E., 2007.
- Tezanos Tortajada, J.F. Ciencia, tecnología y sociedad. Madrid: Sistema, 2000.
- Zamora Bonilla, J.P. Ciencia pública Ciencia privada: reflexiones sobre la producción del saber científico. México: Fondo de Cultura Económica, 2005.
- - Bowler, P.; Morus, I.R. Panorama general de la ciencia moderna. Barcelona, Crítica, 2007.

### Additional

- Acot, P. Historia de la ecología. Madrid, Taurus, 1990.
- Albarracín, A. La teoría celular. Historia de un paradigma. Madrid, Alianza, 1983.
- Barona, J.L. Claude Bernard. Barcelona, Península (textos cardinales), 1989.
- Bowler, P. Evolution. The History of an Idea. Berkeley, University of California Press, 2009.
- Canvis, desafiaments i riscos en el segle XXI. Recerca, Revista de Pensament i Anàlisi. Castelló, UJI, 2007.
- Gomis, A. El fundador de la genética. Mendel. Madrid, Nivola, 2001.
- González Bueno, A. El príncipe de los botánicos. Linneo. Madrid, Nivola, 2001.

- Heath, I. Ayudar a morir. Con un prefacio y doce tesis de John Berger. Madrid, Katz,2008.
- Hodge, J.; Radick, G. The Cambridge Companion to Darwin. Cambridge, Cambridge University Press, 2003.
- Jahn, I. et al. Historia de la biología. Barcelona, Labor, 1990.
- 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.
- Muñoz, E. Biotecnología y sociedad: encuentros y desencuentros. Madrid, Cambridge University Press, 2001.
- Pelayo, F. De la creación a la evolución. Darwin. Madrid, Nivola, 2001.