Current Topics in Science

Code: 100092
ECTS Credits: 6

2025/2026

Degree	Type	Year
Biology	OT	4
Genetics	OT	4
Nanoscience and Nanotechnology	OT	4

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Teachers

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

There are no prerequisites.

It is recommended, however, a certain familiarity with the computer environment since most of the activities will be done virtually through the Moodle classroom and the virtual campus, in particular, mathematical text processing programs, creation of graphics, generation of documents in PDF etc.

Objectives and Contextualisation

This subject is taught simultaneously as a first-year subject (compulsory) in the degrees of Mathematics and, Physics and as a fourth year subject (optional) in the degrees of Chemistry, Environmental Sciences, Computational Mathematics, Nanoscience and Nantecnology (from the Faculty of Sciences) and in the degrees of Biology, Microbiology and Genetics (of the Faculty of Biosciences).

The training objectives are the same for all degrees, but there will be aspects of the subject (type of work, assessments ...) that may be different depending on the course (first or fourth) and the degree of the student.

Training objectives:

- Expand the vision and interest of the student towards different fields of science, beyond the specialty they are studying.
- Acquire an interdisciplinary vision of science.
- Learn to write a scientific work that complies with formal quality standards and know how to present it in public.
- Analyze and reflect on the relationships between science, gender, culture and society.
- Provide the student with keys to the knowledge and basic understanding of frontier topics in current science, presented with an informative nature.
- Reflect on the nature of science.
- Acquire transversal competences.
- Gender perspective: give visibility to the contribution of women in science
- Develop awareness of environmental and sustainability issues from a scientific perspective.

Competences

Biology

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Be able to analyse and synthesise
- Be able to organise and plan.
- Develop a sensibility towards environmental issues.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
- Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
- Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
- Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
- Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.

Genetics

- Adapt to new situations.
- Assume ethical commitment
- Be able to communicate effectively, orally and in writing.
- Be able to organise and plan.
- Be sensitive to environmental, health and social matters.
- Develop creativity.
- Develop self-directed learning.
- Make decisions.
- Reason critically.
- Take the initiative and demonstrate an entrepreneurial spirit.
- Use and manage bibliographic information or computer or Internet resources in the field of study, in one's own languages and in English.

Nanoscience and Nanotechnology

- Adapt to new situations.
- Be ethically committed.
- Communicate clearly in English.
- Demonstrate knowledge of the concepts, principles, theories and fundamental facts related with nanoscience and nanotechnology.
- Lead and coordinate work groups.
- Learn autonomously.

- Manage the organisation and planning of tasks.
- Obtain, manage, analyse, synthesise and present information, including the use of digital and computerised media.
- Reason in a critical manner
- Recognise the terms used in the fields of physics, chemistry, biology, nanoscience and nanotechnology in the English language and use English effectively in writing and orally in all areas of work.
- Resolve problems and make decisions.
- Show initiative and an enterprising spirit.
- Work correctly with the formulas, chemical equations and magnitudes used in chemistry.

Learning Outcomes

1. Actively demonstrate high concern for quality when defending or presenting the conclusions of one's work.
2. Adapt to new situations.
3. Analyse a situation and identify its points for improvement.
4. Analyse the sex- or gender-based inequalities and the gender biases present in one's own area of knowledge.
5. Apply critical spirit and thoroughness to validate or reject both one's own arguments and those of others.
6. Assume ethical commitment
7. Be able to analyse and synthesise.
8. Be able to communicate effectively, orally and in writing.
9. Be able to organise and plan.
10. Be ethically committed.
11. Be sensitive to environmental, health and social matters.
12. Carry out bibliographical searches on scientific subjects, assessing the reliability of sources.
13. Communicate clearly in English.
14. Communicate complex information in an effective, clear and concise manner, either orally, in writing or through ICTs, in front of both specialist and general publics.
15. Critically analyse the principles, values and procedures that govern the exercise of the profession.
16. Develop a sensibility towards environmental issues.
17. Develop creativity.
18. Develop self-directed learning.
19. Draft reports on the subject in English.
20. Effectively use bibliographies and electronic resources to obtain information.
21. Expand the vision and the interest of the student to different fields of the science, stimulating an interdisciplinary prospect.
22. Identify the main inequalities and discriminations in terms of sex/gender present in society.
23. Identify the main topics of modern-day science.
24. Identify the major debates in current scientific thinking.
25. Identify the principal forms of sex- or gender-based inequality and discrimination present in society.
26. Identify the social, economic and environmental implications of academic and professional activities in the area of your knowledge.
27. Identify the social, economic and environmental implications of academic and professional activities within one's own area of knowledge.
28. Lead and coordinate work groups.
29. Learn autonomously.
30. Make decisions.
31. Manage the organisation and planning of tasks.
32. Obtain, manage, analyse, synthesise and present information, including the use of digital and computerised media.
33. Present brief reports on the subject in English.
34. Present, discuss and transmit (orally or in writing) opinions on scientific subjects.
35. Propose new methods or well-founded alternative solutions.
36. Propose projects and actions that incorporate the gender perspective.
37. Propose viable projects and actions to boost social, economic and environmental benefits.

38. Purchase keys for the knowledge and basic understanding of subjects of border in the current science, presented with divulgation character
39. Reason critically.
40. Reason in a critical manner
41. Reporting on scientific issues in other specialist areas with objectivity and originality.
42. Resolve problems and make decisions.
43. Show initiative and an enterprising spirit.
44. Students must be capable of collecting and interpreting relevant data (usually within their area of study) in order to make statements that reflect social, scientific or ethical relevant issues.
45. Students must be capable of communicating information, ideas, problems and solutions to both specialised and non-specialised audiences.
46. Students must develop the necessary learning skills to undertake further training with a high degree of autonomy.
47. Take the initiative and demonstrate an entrepreneurial spirit.
48. Use and manage bibliographic information or computer or Internet resources in the field of study, in one's own languages and in English.
49. Use critical reasoning, show analytical skills, correctly use technical language and develop logical arguments
50. Work correctly with the formulas, chemical equations and magnitudes used in chemistry.

Content

The subject is structured around a series of 10 lectures in different subjects given by specialists in each field. The course proposes the completion of some deliveries on selected topics. These tasks allow for the development of simple, but relevant, applications and illustrations in these subjects.

The course topics are:

Lise Meitner and Robert Oppenheimer: Science and Society
Habitable planets beyond the Solar System
Genomics and climate change
Mathematical models of epidemics
Blockchain and cryptocurrencies
Circular Economy
Epigenetics
Artificial intelligence
Science and gender
Biosensor nanotechnology

Gender perspective

> The course is designed so that the castof speakers is gender balanced with a proportion of female speakers of over 50%. At least two of topics directly address the role of women in science.

Sustainability

> At least two of the conferences focus on the issues of climate change and sustainability.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes

Type: Directed		
Conferences	34	1.36
Seminars	36	1.44
Type: Supervised		
Final project	30	1.2
Portfolio	10	0.4
Type: Autonomous		
Autonomous work	36	1.44

The students will have to follow the classes and do the corresponding assessment activities. All activities can be followed remotely through the Moodle classroom.

By default, fourth-year students are assumed to follow the course remotely for the parts of the course that are detailed in the assessment section.

Presential learning activities

- Conferences (master classes). They are usually held in the conference room of the Science Faculty by a guest specialist. The lectures are recorded on video and can be viewed from the Moodle classroom. The conference materials (PowerPoint files, links...) will also be deposited in the Moodle classroom, where they can be consulted by all students. Some conferences may have a virtual format depending on the availability of the speakers.

- Seminars (complementary sessions for discussion and preparation of the final project). These are open sessions of discussion and debate that will be held the noramlly a week after the conference. The sspecialist will also present the bibliography and proposals for topics for the preparation of the final project. Attendance to these seminars sessions is highly recommended, since it will facilitate the preparation of the student's portfolio, at least the attendance to the session corresponding to the topic chosen for the final project. These sessions are also recorded and some may be held remotely.

Supervised learning activities

- Preparation of a portfolio. Throughout the course, students must periodically submit a series of activities on the topics discussed in the lectures via the subject's Moodle classroom. These include taking tests, questions to the speaker, participating in complementary sessions and realizing homeworks on chosen topics. These deliveries will constitute the student's portfolio, and represent a compilation of evidence of the student's learning. These tasks may be different for first and fourth year students, adapting to their level of knowledge.
- Final project. The student will have to prepare (in a group of 3-4 members) a compulsory final project on one of the topics proposed in the seminars of the conferences. The work will be supervised by the specialist and the team of teachers of the subject. In the case of fourth year students, the work can not be done on topics directly related to the degree that the student is studying, and must be drafted and presented in English. All works must be presented in public in front of a committee. In especial cases of students being abroad the presentation of those can be done remotely. The final project is mandatory for all students of the subject.

Autonomous learning activities

The student will have to consult bibliography (books, scientific journals) and conduct information searches via the Internet in order to do the tasks that will be asked in the student's portfolio and the final work. Several tutorials are scheduled in different times of the year with the aim that students will be able tocontact the team of professorsto solve doubts and to keep track of the preparation of the portfolio and

the final work. Attendees will also get advice on ICT resources for the writing of scientific texts and effective presentations.

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

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Final project	0,45	4	0.16	2, 38, 21, 15, 4, 3, 5, 29, 6, 14, 13, 1, 43, 11, 17, 18, 33, 12, 41, 31, 24, 23, 26, 27, 25, 22, 28, 10, 32, 30, 47, 34, 35, 36, 37, 46, 45, 44, 39, 49, 40, 19, 42, 8, 16, 7, 9, 50, 20, 48
Invidual short tests	0,2	0	0	5, 23, 44, 49, 42, 9, 48
Portfolio	0,35	0	0	23, 44, 49, 42, 9

The students of the fourth year can follow the course remotely and must follow all the lectures and answer the corresponding tests.

Specifically:

- Answer 10 tests and view the corresponding conferences
- Complete 5 deliveries of the proposed ones
- Write and present a paper in English in a group of 3-4 members

The details of these activities are described below

There are three types of evaluation activities:

A) Individual short objective tests (20% of the final grade).

These are multiple-choice tests that assess attention and understanding of the material.

Non-attending students must follow the lectures through the recordings and materials available on the Virtual Campus and complete a specific test for each one via the Moodle platform.
The students must complete the corresponding tests of all lectures.
The average of the tests will be calculated based on the 10 tests. If fewer than 10 are completed, the missing tests will count as zero.

B) Student portfolio (35% of the final grade)

The student must maintainan up-to-date virtual portfolio on Moodle, where all mandatory exercises and assignments proposed throughout the course will be submitted.
It should also include a selection of materials demonstrating the student's engagement in the discussion sessions of the lectures, including personal opinions and individual research.
Depending on the type of exercise, transversal skills such as critical thinking, autonomous learning, and the ability to analyze and synthesize will be assessed. These requirements may vary depending on whether the student is in the first or fourth year, adapting to their level.

The average of the submissions will be calculated based on the 5 assignments. If fewer than 5 are submitted, the missing ones will count as zero.

C) Final project (45% of the final grade)

Each student must participate in the completion of a final project, mandatory to be done in groups of three to four students, chosen among those proposed by the lecturers of the various sessions.
The final project must be submitted in written form (electronically) within the established deadlines and must comply with the formal and content requirements of a scientific paper, following the criteria that will be explained at the beginning of the course in a dedicated info session.
In the case of fourth-year students, the paper must be written in English, the presentation must be held in english and the work cannot cover topics directly related to their own degree program.

At the end of the course, several public presentation sessions will be held on dates announced in the course calendar. All group members must participate in the presentation.
Evaluation will be carried out by a committee of professors who will assess the quality of the presentation, communication skills, organization, etc.
Where possible, the schedule will consider availability so that both attending and non-attending students can present their project, as the presentation is strictly mandatory.
For students abroad, presenting via videoconference will be considered.

In any case, it is the student's responsibility to reserve the presentation dates, which will be known at the beginning of the course, in order to be able to present the project.
In case of schedule conflict, the course team must be notified in advance to explore possible adjustments.

The final project grade will take into account both the written paper and the oral presentation. The final mark must be at least 4 out of 10 to pass the course.
If the final project grade is below 4, the team may be asked (though not necessarily) to revise and resubmit the project.

AI

Permitted use: "In this course, the use of Artificial Intelligence (AI) technologies is permitted as an integral part of the development of the work, provided that the final result reflects a significant contribution from the student in terms of analysis and personal reflection. The student must clearly identify which parts were generated using this technology, specify the tools used, and include a critical reflection on how these influenced the process and the final result of the activity. Lack of transparency in the use of AI will be considered academic dishonesty and may lead to a penalty in the activity grade, or more severe sanctions in serious cases. Excessive use of AI will be penalized if there are serious errors or, for example, if the style and language of the written work differ significantly from those used in the oral presentation."

Not gradable
All students who do not submit the final course assignment will be considered "not gradable."

Bibliography

The bibliography of each specific subject will be given to the complementary or seminar session of the corresponding conference.

The transparencies of the conferences will be available on the Virtual campus.

About the writing of scientific articles see (for example): Cargill, Margaret and O'Connior, Patrick. Writing scientific research articles: strategy ans steps. Wiley-Blackwell, 2009

Software

Familiarity with advanced text processors such as LaTeX may be convenient for the realizaion of the final project in some of the topics of the course.

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this link. To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(SEM) Seminars	1	Catalan	annual	morning-mixed
(SEM) Seminars	2	Catalan	annual	morning-mixed
(SEM) Seminars	3	Catalan	annual	morning-mixed
(SEM) Seminars	4	Catalan	annual	morning-mixed
(SEM) Seminars	5	Catalan	annual	morning-mixed
(SEM) Seminars	6	Catalan	annual	morning-mixed
(SEM) Seminars	7	Catalan	annual	morning-mixed
(SEM) Seminars	8	Catalan	annual	morning-mixed
(SEM) Seminars	9	Catalan	annual	morning-mixed
(SEM) Seminars	10	Catalan	annual	morning-mixed
(TE) Theory	1	Catalan	annual	morning-mixed
(TE) Theory	2	Catalan	annual	morning-mixed