

Current Scientific Matters

Code: 104053
ECTS Credits: 3

2024/2025

Degree	Type	Year
2502444 Chemistry	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

Competences

- Be ethically committed.
- Communicate clearly in English.
- Communicate orally and in writing in one's own language.
- Learn autonomously.
- Manage, analyse and synthesise information.
- Obtain information, including by digital means.
- Reason in a critical manner
- Show sensitivity for environmental issues.
- Use IT to treat and present information.
- Use the English language properly in the field of chemistry.

Learning Outcomes

1. Be ethically committed.
2. Communicate clearly in English.
3. Communicate orally and in writing in one's own language.
4. Design effective information search strategies in any research subject.
5. Learn autonomously.
6. Manage, analyse and synthesise information.
7. Obtain information, including by digital means.
8. Reason in a critical manner
9. Show sensitivity for environmental issues.
10. Use IT to treat and present information.

Content

The subject is structured around a series of 11 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.

Students of the chemistry degree follow a reduced version of 3 ECTS (of the total of 6 ECTS). The evaluable activities are therefore reduced in the corresponding proportion, that is, students must carry out the activities of approximately half the course according to their own preferences. Naturally, you will be able to participate in the other activities if you wish.

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
 Ultracold atoms and quantum simulators
 Biosensor nanotechnology

Gender perspective

The course is designed so that the cast of speakers is gender balanced with a proportion of female speakers of over 45%. At least two of the 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	12	0.48	2, 1, 7, 8
Seminars	12	0.48	6, 1, 9, 8
Type: Supervised			
Final project	30	1.2	2, 3, 4, 6, 7, 10
Portfolio	5	0.2	5, 4, 6, 7, 8
Type: Autonomous			
Autonomous work	12	0.48	5, 4, 9, 7, 8

The students of the degree of chemistry (subject of 3 ECTS) will have to follow the classes and do the assessment activities corresponding essentially to half of the course (specific details in the evaluation section). All activities can be followed remotely through the Moodle classroom.

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 normally a week after the conference. The specialist 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, and in any case, at least the attendance to the session corresponding to the topic chosen for the final project is compulsory. These sessions are also recorded and some may be held remotely. Exceptionally, the non-presencial students who are unable to attend them can arrange a personal interview with the teachers to prepare the final work in a schedule to be agreed.

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 to contact the team of professors to 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

Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Final project	0,45	4	0.16	2, 3, 4, 6, 7, 8, 10
Individual short tests	0,2	0	0	6, 9, 8
Portfolio	0,35	0	0	5, 6, 1, 7, 8

The students of the degree of chemistry (3 ECTS) can follow the course remotely. . Chemistry students must follow at least 6 lectures (of their choice) and answer the corresponding tests. Failure to complete two or more tests will automatically lead to the qualification of "not presented"

Specifically:

- Answer 6 tests (and view the corresponding conferences)
- Complete 3 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 tests to be completed via Moodle during some days after the conference. These tests will assess the degree of attention and understanding of the subject. Non-attendance students will have to follow the lectures via the recordings and materials of the Virtual Campus and perform a specific test about them in the Moodle classroom. Students must follow all the lectures and answer all the tests. Failure to complete at least 4 tests will automatically be considered as an abandonment of the course.

B) Student portfolio (35% of the final grade). The student will have to update a virtual portfolio in the Moodle classroom, where he/she will receive the deliveries of the exercises and compulsory activities of the course. There will also be a selection of materials that will keep track of their involvement in the discussion sessions of the conferences, reflecting their personal opinions and their own searches. Depending on the type of exercise proposed, cross-curricular skills such as critical thinking, autonomous learning, the ability to analyze synthetise, etc. will be valued and may be different for first and fourth year students, adapting to their level of studies.

C) Final project (45% of the final mark) Each student will have to participate in the preparation of a compulsory final project in groups of 3-4 members. The topic will be chosen among those that will be proposed by the specialists of the different sessions. The work must be submitted to the Moodle classroom within the marked periods and must conform to the formal and content characteristics of a scientific work, fulfilling the criteria that will be presented at the beginning of the course in a specific informational session. In the case of fourth year students, it must be written in English, with the structure of a scientific research article and can not be done on the subjects directly related to the degree that the student is studying.

Throughout the course there will be several public sessions for the oral presentations, on dates that will be announced in the calendar of sessions. All the members of the group have to present a part of the work. This presentation is strictly compulsory. The evaluation will be done by a committee of professors that will evaluate the quality of the presentation, the capacity of communication and organization, etc. If possible, the timetable of the presentations will take into account the students' constraints. For students abroad there is the possibility of doing their part of the presentation by videoconference.

In any case, it is the student's obligation to reserve the presentation dates, which will be known at the beginning of the course. In case of incompatibility with any of the dates, it must be notified enough in advance to the professor's team of TCA to facilitate making adjustments if possible.

The qualification of the final work will take into account both the submitted text and the presentation. The mark can not be less than 4 to be able to pass the course. If this grade is not passed, a modification of the work may be suggested.

AI tools.

Naturally, they are not prohibited, but excessive use of AI will be penalized, if there are serious errors or if, for example, the style and language of the written work is very far from the style and language used in the presentation oral

Single evaluation

It is somehow built-in the structure of this subject. All activities, but the final presentation of the project, can followed remotely with enough time flexibility. In case, of important incompatibilities along the academic year the students should contact the Professor's team to adapt the deliverables.

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 and steps. Wiley-Blackwell, 2009

Software

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

Language list

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	Spanish	annual	morning-mixed
(SEM) Seminars	10	English	annual	morning-mixed
(TE) Theory	1	Catalan	annual	morning-mixed
(TE) Theory	2	Catalan	annual	morning-mixed