

**Bachelor's Degree Final Project**

Code: 102489  
ECTS Credits: 15

Degree	Type	Year	Semester
2502444 Chemistry	OB	4	0

## Contact

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## Teaching groups languages

You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

## Teachers

Maria Muñoz Tapia

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Montserrat Lopez Mesas

Laura Masgrau Fontanet

Maria Angeles Jimenez Lopez

## Prerequisites

The student must have passed at least 2/3 parts of the total of ECTS corresponding to the studies they are studying (160 ECTS for students of the Degree in Chemistry and 212 ECTS for students of the double Degree in Physics and Chemistry) and have all the first course passed to enroll in this subject (Academic Affairs Committee of the Faculty of Sciences of February 27, 2007).

The circuit for preparing the final year project begins with the course enrollment.

Prerequisites for the TFG modality via external practices:

The student must be enrolled in the course External Practices. This subject has the following prerequisites: At the time of making the application, to take the subject of external internships, the student must have an average equal to or greater than 5.0 in "barem 34" and 150 credits Approved (among which there must be those of all subjects of the first year).

## Objectives and Contextualisation

OBJECTIVES OF THE TFG

The Final Project is an autonomous work based on topics related to any of the subjects or subjects of Chemistry.

The objectives of the Final Project are to deepen their own theme and / or apply and know how to convey knowledge acquired during the studies of Chemistry.

In general, the Work will incorporate both theoretical and practical aspects and a discussion.

The TFG must show the knowledge, abilities and skills achieved by the students in the Degree studies, demonstrating that they have achieved the maturity necessary to carry out the profession.

The TFG must show a certain degree of originality, either in the discussion of known results or in obtaining a new result.

#### OBJECTIVES OF THE METHODOLOGY MODULE OF RESEARCH WORK

Understand the significance of end-of-degree work, as research work, within the context of scientific research and its contribution to development and social progress.

Acquire a methodology for the elaboration of academic research work.

Learn to communicate and defend the results of an investigation through written memory and oral presentation.

### Competences

- Be ethically committed.
- Communicate orally and in writing in one's own language.
- Develop synthesis and analyses studies in chemistry from previously established procedures.
- Learn autonomously.
- Manage the organisation and planning of tasks.
- Manage, analyse and synthesise information.
- Obtain information, including by digital means.
- Operate with a certain degree of autonomy and integrate quickly in the work setting.
- Propose creative ideas and solutions.
- Reason in a critical manner
- Resolve problems and make decisions.
- Show an understanding of the basic concepts, principles, theories and facts of the different areas of chemistry.
- Show initiative and an enterprising spirit.
- 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. Adequately apply chemistry concepts and theory to produce an academic or professional study in the field of chemistry.
2. Be ethically committed.
3. Communicate orally and in writing in one's own language.
4. Learn autonomously.
5. Manage the organisation and planning of tasks.
6. Manage, analyse and synthesise information.
7. Obtain information, including by digital means.
8. Operate with a certain degree of autonomy and integrate quickly in the work setting.
9. Produce a summary in English of the work done.
10. Propose and develop protocols to perform an academic or professional study in the field of chemistry.
11. Propose creative ideas and solutions.

12. Reason in a critical manner
13. Resolve problems and make decisions.
14. Show initiative and an enterprising spirit.
15. Show sensitivity for environmental issues.
16. Use IT to treat and present information.

## Content

### TFG CONTENTS

The final degree project may be of one of the following types:

- a. Research Project Proposal: It will consist of the elaboration of a written project of basic or applied research, so that it can be carried out later by a researcher or research team.
- b. Bibliographic study: An argumentative summary such as a 'bibliographic review' on the current situation of a specific topic in the scope of chemistry or aspects of basic or directed research.
- c. Dissemination: It will consist of the informative elaboration of a scientific topic of social interest addressed to the general public or to students of non-university educational levels.
- d. Industrial project: It will consist of the elaboration of an innovation project that is related to any aspect of the chemical, to be carried out in a certain company.
- e. Technical-ethical-legal project: Under this modality we want to accommodate works that deal with issues related to regulations - industrial, environmental ... - or with ethical aspects related to the exercise of the profession or experimentation, with the analysis of the sociological impact of science in a given field, etc.
- f. Experimental project: It will consist of the elaboration of a project in a research laboratory of some university department or research center.

The student will make an application with priority of 5 works of the mentioned types, that will be chosen from a list of proposals. Apart from that, in the event that there are students who wish to carry out the TFG outside the institutions that participate in the general offer, the student will be able to propose his / her own subject that will have to justify appropriately.

Regardless of the type, the work may be carried out in institutions or companies external to the UAB, as an extension of the subject 'External internships' and in the framework of mobility programs.

The work will be done individually.

The tutors of the final degree project will be professors / doctoral researchers belonging to the Department of Chemistry or to other departments that teach in the Degree in Chemistry. Therefore, it will be necessary for the student to have a tutor who meets these requirements in the event that the TFG is carried out in a department / center of the UAB other than those mentioned or in an external institution. The TFGs that are carried out within the framework of the double Degree in Physics and Chemistry must have a tutor for each of the degrees involved.

### CONTENTS OF THE RESEARCH WORK METHODOLOGY MODULE

#### THEORY:

1. The TFG as research work: significance and planning.
2. TFG documentation process: Approach to the subject. Systematic bibliographic search in specialized databases. Preparation of bibliographies according to the style of the American Chemical Society (ACS).
3. The report and oral presentation of the TFG: formal and structural aspects.

PRACTICES: Activities related to the theoretical content studied and contextualized in the particular subject of each student's TFG.

## Methodology

## TFG METHODOLOGY

### 1. TFG preparation circuit, TFG modality without external practices

#### 1.1. Organization chart and responsibilities

##### 1.1.1. Supervising tutor

The supervising Tutor will be a member of the staff of the receiving center with a minimum qualification of Doctor. There may be a co-tutor who must have a minimum degree of Bachelor/Graduate. The function of the supervising Tutor and/or co-tutor will be to design and supervise the project. He will also take care of the student's punctuality and will have to issue an evaluation on the work done by the student and the learning achieved, among other criteria.

##### 1.1.2. Academic tutor

The academic Tutor will be responsible for monitoring the students following the guidelines indicated in the corresponding section. These tutors will be able to participate in correcting the TFG report.

##### 1.1.3. The Coordination

The Coordination of the TFG mode without External Practices will be made up of one or more professors from the Department of Chemistry, UAB.

##### 1.1.4. TFG evaluation committee

The TFG Evaluation Committee will be responsible for evaluating each student's written report and oral presentation. The evaluation commissions will be named by the Coordination of the modality and will be made up of two members chosen from among the teaching staff involved in the End of Degree Work subject.

#### 1.2. Enrollment

Degree student in Chemistry without external internships:

Students will register according to the established calendars for the academic year in which they wish to complete and defend the TFG. Students can enroll in one of three different groups: groups 1, 2 and 3. Enrollment in group 1 implies that the subject will be completed and evaluated in its entirety during the 1st semester (February convocation). Enrollment in group 2 is designed for the subject to be assessed at the end of the 2nd semester (July convocation). Enrollment in group 3 means that students want to be assessed in September. In the case of groups 2 and 3, the work of the TFG can be carried out both annually and only during the 2nd semester.

TFG enrollment will remain open throughout the academic year. Even so, there will only be two rounds of application and assignments: in the months of June-July of the previous year (1st round of assignment) and in September immediately before the start of the course (2nd round of reassignment for students who have not applied or those who do not have assigned work). Eventually, there will be a 3rd round of reassignment in the 2nd semester.

Student of the Double Degree in Physics and Chemistry without external internships:

For dual degree students, enrollment only applies to groups 72 (July convocation) and 73 (September), given that the TFG is annual and not semester. Assignment and reassignment turns are the same.

#### 1.3. Proposal and assignment of the TFG

Work proposal: Project offers for the realization of the TFG will be given in two ways:

**\*\*General Offer:** Where all the projects proposed by the Department of Chemistry, other Departments and scientific and technical services of the UAB and the external research centers (ICMAB, ICN2, CNM, IBB, ALBA, ICTA) will be registered. Prior to the beginning of each academic year, the coordination of the TFG will ask the teaching staff who can act as tutors, proposals of topics for the completion of the works. These

proposals must indicate: name of the tutor, title of the work, and types to which it could be assigned (see section 3, more than one type can be specified) and preferred semester of completion. The professors who present proposals will act as tutors for the works.

**\*\*Free Offer:** Free Projects are reserved only for completion in centers other than those participating in the General Offer. Always within the established periods, students can propose TFG projects to the coordination of the subject, in a reasoned and justified way. These projects must be different from those of the General Offer. In any case, the coordination team will assess and manage these proposals.

**Dissemination of the proposals:** The coordination of the TFG will publish the work proposals received in the virtual space intended for the subject.

**Assignment request:** The assignment request by students will be made through an internet form, which will be accessed via a link in the Degree's virtual space. In this form, up to 5 prioritized preferences from the list of jobs offered will be listed.

**Assignment of work:** The coordination of TFG will assign the projects requested in the general offer to students taking into account their academic records (Barem 34) and the order of preferences. The result of the assignment will be made public through the virtual space. Students without assigned work in the 1st shift will be assigned in the 2nd or 3rd reassignment shift.

**Safety seminar:** All students must attend a theoretical safety course taught by OSHA at the UAB. Students who complete the TFG (experimental or computational) in the Department of Chemistry must also complete the practical firefighting course. Students who carry out experimental TFGs at other external research centers will need to carry out the activities programmed from the receiving centre. During the theoretical safety course, it will be necessary to take an achievement test of the associated risk and safety skills in a chemical laboratory. It will be necessary to pass it in order to present the TFG.

**Calendars:** The calendars of the deadlines of the process will be published in the virtual space of the subject.

#### 1.4. Realization and monitoring of the TFG

Each TFG tutor will set a date for an initial joint meeting with their tutored students where the follow-up schedule will be defined.

This monitoring will result in evidence that the students and tutors will have to generate, following the guidelines set by TFG coordination and that will be available in the subject's virtual space as well as on the platform TFE.

All the works will be collected in a report that will have a maximum length of 30 pages and can be written in Catalan, Spanish or English using the corresponding template. All reports must include a summary of a maximum length of one page drawn up in Catalan, Spanish and English. Those memories that are experimental will also include as an annex security issues described in the template.

Students will not be able to disseminate the TFG on their own and will sign a confidentiality agreement agreed by the Faculty of Sciences.

#### 1.5. Deposit of the written reports of the works

Prior to the oral defense day, on dates that will be made public with sufficient advance notice, the students must submit their respective written reports in PDF format via the virtual space.

#### 1.6. Oral presentation of the TFG

The Coordination of the Chemistry Degree will set the dates for the oral defense of the TFGs that will be made public. Specifically, three different periods of oral defenses will be scheduled in the calendar: convocations in February, July and September. At the February call, all the oral presentations corresponding to the students enrolled in group 1 of the subject must be made. The students of group 2 and 72 will make the oral defense of

the work in the July call, and those of group 3 and 73 in the September call. These students must agree on this decision with their tutors and communicate it to the coordination of the TFG. A deadline date will be set for requesting group changes. After this date, group changes will not be accepted.

For each period of oral defenses, the schedule of each student's presentations will be drawn up by the TFG coordination and published in the virtual space. The oral presentation will be made with the help of computer media and will last a maximum of 15 minutes. The committee that will evaluate the exhibitions will be made up of two professors. Following the oral presentation, the commission will hold a round of questions of a maximum duration of 25 minutes. Defenses will be held behind closed doors.

## 2. TFG development circuit, TFG modality with external practices

### 2.1. Organization chart and responsibilities

#### 2.1.1. Tutor of the company

The Tutor of the company will be a member of the company's staff with a minimum degree of bachelor or graduate. His role will be to design and supervise the project. He will also take care of the student's punctuality and will have to issue an evaluation on the work done by the student and the learning achieved, among other criteria.

#### 2.1.2. Tutoring teachers

The Tutor Professor will be one of the correcting professors or a coordinating professor of the subject External Practices. This tutor will be responsible for monitoring the students following the guidelines indicated in the corresponding section. In addition, the Tutor Professor will participate in the evaluation of the TFGs.

#### 2.1.3. The Coordination

The Coordination of the TFG modality via External Practices will be made up of one or more professors, who will also be responsible for the Coordination of the External Practices subject.

#### 2.1.4. TFG evaluation committee

The TFG Evaluation Committee will be responsible for evaluating each student's written report and oral presentation. The evaluation commissions will be named by the Coordination of the modality and will be made up of two members chosen from among the teachers of the External Practices subject, one of whom will be a Coordinator of the modality.

### 2.2. Registration:

For students of TFG + internships in a company, the registration only applies to groups 11,12 and 13

Enrollment is face-to-face and will take place once it has been accepted by a company and always before starting the project. Normally, you will register simultaneously for the TFG and the External Practices subject, although you can start by enrolling in External Practices and, during its completion, enroll after the TFG. The student can defend his work in any of the convocations in February, July or September of the course in which he has enrolled. The submission and defense dates will be similar to those of the other TFGs and will be announced in the Moodle classroom well in advance.

TFG enrollment will remain open throughout the academic year. Even so, there will only be two rounds of application and assignment of companies that will coincide with those of External Internships. The 1st period is in October/November, with internships beginning in the 2nd academic semester. The second period is in March/April, the beginning of the internship can be in the summer (beginning of July) or in the 1st semester of the following academic year.

### 2.3. Application and allocation of the TFG

The assignment and application mechanism is the same as that of the subject External Practices.

### 2.4. Realization and monitoring of the TFG

Since this form of TFG is linked to the completion of the PE, at the mandatory meeting of the student with his UAB tutor to discuss the PE, the student will inform him that he will do TFG+PE. The student will, obligatorily, have a new meeting with his UAB tutor during the writing of the report, in which they will discuss the draft of the document. The company tutor will monitor the student as agreed in the agreement.

The TFG report will have a limited length, which will be indicated in the template in the moodle of the subject, and may be written in Catalan, Spanish or English using the corresponding template found in the moodle of the subject. All reports must include a summary of a maximum length of one page drawn up in each of the three languages: Catalan, Spanish and English.

## 2.5. Deposit of the written reports of the works

Prior to the day of the oral defense, on dates that will be made public in sufficient advance, the student must hand in a copy of the report to the task enabled in the moodle of the subject "External Practices (PE) and TFG via PE".

## 2.6. Oral presentation of the TFG

The Coordination will set the dates for the oral defense of the TFGs that will be made public before the registration period for each academic year. Specifically, three different periods of oral defenses will be scheduled in the calendar: convocations in February, July and September. For each period of oral defenses, the schedule of each student's presentations will be drawn up by the Coordination and published in the Moodle classroom in advance. In the oral presentation, which will be held behind closed doors, the student will have to use computer media and will have a maximum duration of 15 minutes. The Committee that will evaluate the exhibitions will be made up of two professors from the subject External Practices. Following the oral presentation, the commission will hold a round of questions.

## METHODOLOGY OF THE MODULE OF RESEARCH WORK METHODOLOGY

The module consists of 9 class hours: 1 one-hour session and 4 two-hour sessions. The sessions include a first part where theoretical content is presented and a second aimed at its practical application.

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.

## Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Methodology module for research work	9	0.36	4, 3, 5, 6, 7, 10, 9, 16
Type: Supervised			
Follow-up tutorials	10	0.4	1, 14, 5, 6, 15, 10, 11, 9
Type: Autonomous			
Oral presentation and public defense	0.5	0.02	1, 3, 5, 2, 15, 11, 16
Preparation of a written memory	69	2.76	1, 3, 14, 5, 6, 2, 15, 8, 11, 12, 9, 13, 16
Reading texts and finding information	43	1.72	4, 14, 5, 6, 2, 15, 7, 8, 12, 13, 16

## Assessment

### TFG ASSESSMENT:

TFG modality without external internships:

The final grade will consist of the following contributions:

Tutor/supervisor mark: They will evaluate the work done and the skills acquired based on the monitoring carried out. As a result of this, each tutor will have to write an evaluation report of the student that they will have to deliver to the coordination of the TFG via the TFE tool. This report must include a follow-up grade that will be equivalent to 30% of the final grade of the subject. When more than one tutor/supervisor intervenes, a joint report will be made. The teaching staff Tutor/supervisor will have rubrics for the evaluation and forms of the student's portfolio, with the aim of establishing a unified frame of reference that allows a transparent evaluation.

Evaluation committee mark: Based on the evaluation of the written reports and oral defenses, the evaluation committees will judge the transversal skills acquired, the content, approach, development and degree of difficulty of the work done and the quality of the presentation and defense carried out. As a result of this, each committee will prepare an evaluation report following the guidelines of a rubric prepared by the TFG Coordination. This report must contain a memory note for the work and an oral defense note, each of which will be equivalent to 30% of the final grade of the subject.

Module Research Work Methodology mark: This part will contribute 10% to the final grade. See module evaluation section.

Based on the previous grades, the TFG Coordination will calculate the final grade for the subject and make it public in the virtual space. In addition, it will select a number of works among those with the best qualification in order to award honors. In case of doubt, individual interviews will be held with candidates for this qualification.

Students who do not complete the evidence of the follow-up process will not be able to present the TFG and will be classified as "non-evaluable". Students who carry out these evidences, but do not submit the written report in the established calendar, do not make the oral defense, or their result is poor will be graded as grade=0 and grade "Suspended". In addition, cases of plagiarism of the work will also involve the automatic suspension of the TFG. In any of these cases, this will lead to a new registration and to complete and/or restart the circuit of preparing the TFG in the following year.

The tutor/supervisor teaching staff will have rubrics for the evaluation and forms for the student's portfolio, with the aim of establishing a unified frame of reference that allows a transparent evaluation.

TFG modality with external practices:

The evaluation of the student's TFG will be carried out jointly by their Tutor at the company and the Evaluation Committee. It will include the grade of the research methodology module, which will be equivalent to 10% of the final grade of the subject.

Tutor in the company: He will issue a report/evaluation based on the student's monitoring, with a grade that will be equivalent to 30% of the final grade of the subject.

Evaluation Committee: Through the written report and the oral presentation, the Committee will evaluate the transversal skills acquired, the content, approach, development and degree of difficulty of the work carried out, as well as the quality of the presentation and defense of the work in response to the Commission's questions. As a result of this evaluation, the Commission will draw up an evaluation report following the guidelines of a rubric prepared by the Coordination. This report must include a memory note for the work (30% of the subject's final grade) and a presentation and oral defense grade (30% of the subject's final grade).

TFG modalities without or with external practices:



To make the weighted average, a minimum grade of 4 out of 10 points is required, both from the Tutor supervisor or Tutor in the company and from the Evaluation Committee (Tribunal), as well as from the research methodology module.

If any of the Tutor/supervisor/Tutor/tutor/a in the company or the research work methodology module's grades are lower than 4, the subject will have a final grade corresponding to "Fail".

If the grade of the Court or Evaluation Committee is lower than 4, the subject will have a grade of "Not assessable" and the student will have to rewrite the report, present it and defend it orally at the next call of the course academic and in the case of the September call, to an extraordinary one.

Cases of plagiarism of the work will result in a grade of " Fail " with a grade of 0.<sup>1</sup> This will result in a new enrollment and completing and/or restarting the TFG preparation circuit.

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<sup>1</sup> It will be considered plagiarism (<http://www.plagiarism.org/>):

- present someone else's work as your own
- adopting words or ideas from other authors without due acknowledgment (that is, without citing)
- do not use quotation marks in a literal quote
- give incorrect information about the true source of a quote
- paraphrasing a source without mentioning the source (ie without citing)
- abusive paraphrasing, even if the source is mentioned.

#### EVALUATION Research work methodology module (10% OF THE FINAL GRADE OF THE TFG)

A continuous assessment system is followed which includes the following concepts, all of which are mandatory:

Attendance(20%): Unexcused fouls will be penalized with 1 point.

Practices (40%): Non-compliance (non-performance, incompleteness and/or untimely delivery) will be penalized with 1 point.

Exam (40%): It will take place in the last session. It includes alternative answer and/or short essay questions on the theoretical and practical content covered during the course.

To be able to make an average with the rest of the grades in the TFG subject, you must obtain, in the module, a minimum final grade of 4 points.

Re-evaluation: People who, having met the requirements of the continuous evaluation, do not obtain the minimum qualification required (4 points) may opt for a re-evaluation. This will consist of a single exam. The grade obtained in this test will constitute the final grade of the module and may not be higher than 4 points.

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Methodology module for research work	10	0	0	3, 6, 7, 10, 9
Note of the oral presentation and defense	30	0.5	0.02	3, 14, 2, 15, 11, 12, 16
Note of the report of the end of degree project	30	0	0	1, 3, 14, 5, 6, 2, 15, 7, 10, 11, 12, 9, 13, 16

Note of the tracking	30	0	0	1, 4, 14, 5, 6, 2, 15, 7, 8, 10, 11, 12, 13, 16
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## **Bibliography**

The basic bibliography will be suggested by the supervisor of each TFG according to the topics to work with, regardless of the bibliographical research that the student does.

## **Software**

The subject does not have any explicitly recommended software