

Bachelor's Degree Final Project

Code: 102489
ECTS Credits: 15

Degree	Type	Year	Semester
2502444 Chemistry	OB	4	0

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

Name: Manel Alcalá Bernardez
Email: Manel.Alcala@uab.cat

Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

Jordi Coello Bonilla
Eulàlia Fuentes Pujol
Maria Muñoz Tapia
Joan Pau Bayón Rueda
Angels Jimenez Lopez
Manel Alcalá Bernardez

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 ones 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 ones 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

The TFG as research work. Research planning.

Documentation phase: Consultation and bibliographic search in scientific databases.

Bibliography: The Style of the American Chemical Society (ACS).

Writing of the TFG report and oral presentation.

PRACTICES

Activities related to the theoretical contents and contextualized in the thematic of the TFG of each student in particular.

Methodology

TFG METHODOLOGY

TFG elaboration circuit (TFG modality without external internships)

1. Registration

The student will enroll according to the established calendars of the academic year in which he wants to carry out and defend the TFG. Students will be able to enroll in 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 call). Enrollment in group 2 is intended for the subject to be assessed at the end of the 2nd semester (June call). Enrollment in group 3 implies that students want to be assessed in September. In the case of groups 2 and 3, the work of the TFG can be developed both annually and only during the 2nd semester.

TFG enrollment will remain open throughout the academic year. However, there will only be two shifts of application and assignment of work: in the months of June-July of the previous year (1st shift assignment) and in September immediately before the start of the course (2nd shift of reassignment for students who have not applied or those who have no work assigned). Eventually, there will be a 3rd round of reassignment in the 2nd semester. Regardless of the enrollment group (1,2,3), students enrolled in the subject must apply for work primarily in the 1st round.

For students with a double degree, enrollment only applies to groups 72 (June call) and 73 (September), since the TFG is annual and not semester. The assignment and reassignment shifts are the same.

For TFG + internships in companies, only enrollment is applied to groups 11, 12 and 13.

2. Proposal and assignment of the TFG

Proposed works:

The offers of projects for the realization of the TFG, will come given by 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 external research centers (ICMAB, ICN2, CNM, IBB, ALBA, ICTA) will be assigned. Prior to the beginning of each academic year, the coordination of the TFG will ask the group of teachers who can act as tutors, proposals for topics for the work. These proposals must indicate: name of the tutor, title of the work, and typologies to which it could be assigned (see section 3, more than one typology can be specified) and preference for the semester of completion. Teachers who submit proposals will act as tutors for the work.

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

Dissemination of the proposals: The coordination of the TFG will publish the proposals of works received in the virtual space destined of the asignatura. This list will be valid throughout the course.

Application for works: The application for works by students will be made using an online form, which will be accessed through a link in the virtual space of the subject. This form will include up to 5 prioritized preferences from the list of jobs offered or, failing that, the "free project" proposal indicating the place where the work will be done and the name of the tutor.

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

Safety seminar: All students must attend a theoretical safety course taught by the OSHA at the UAB. Students taking the TFG (experimental or computational) in the Department of Chemistry will also be required to take the practical firefighting course. Students who carry out experimental TFGs at other external research centers will be required to perform the activities scheduled from the receiving center. During the theoretical safety course, it will be necessary to take a test to achieve the associated competencies of risk and safety in a chemical laboratory. It will be necessary to pass it to be able to present the TFG.

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

3. Carrying out and monitoring the TFG

Each TFG tutor will set a date for a joint initial meeting with their tutored students where the follow-up schedule will be defined, which will specify a minimum set of individualized meetings covering the following topics:

Elaboration of the monitoring calendar

Preparation of a report with the state of the art of the subject considered

Elaboration of the objectives of the TFG and temporary planning of the work

Performing security evidence

Discussion of the results obtained and elaboration of the index of the TFG report to be written

Discussion of the draft TFG report.

Each of these meetings will result in evidence generated by the student and validated by the tutor, which must be prepared using the format and following the guidelines set by the coordination of TFG and will be available in the virtual space of the subject. Evidence from meetings 0-4 will form part of each student's portfolio and will be complemented by a tutor's report during the assessment process (see section 5). The evidence resulting from meeting 5 will be the draft report of the TFG, which will have to be filed as described below. Aquesta memòria tindrà una extensió màxima de 30 pàgines i podrà ser escrita en català, castellà o anglès utilitzant la plantilla corresponent. Totes les memòries hauran de portar un resum d'una extensió màxima d'una pàgina elaborat en català, castellà i anglès. Those reports that are experimental will also include as an appendix security issues described in the template.

The student will not be able to make any dissemination of the TFG on his own and will sign a confidentiality agreement agreed by the Faculty of Science.

4. Deposit of the written reports of the works

Prior to the day of the oral defense, on dates that will be made public well in advance, the student must submit his written report in PDF format through the virtual space. In addition, if applicable, a single paper copy of the report must be submitted to the Secretariat of the Department of Chemistry.

5. Oral presentation of the TFG

The Coordination of the Degree in Chemistry will set the dates for the oral defense of the TFG that will be made public. Specifically, three different periods of oral defenses will be scheduled on the calendar: calls for February, June, and September. In the February call, all the oral presentations corresponding to the students enrolled in group 1 of the subject must be held. Students in groups 2 and 72 will take the oral defense of the work in the June call, and those in groups 3 and 73 in the September call. These students will have to agree on this decision with their tutors and communicate it to the TFG coordination. A deadline 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 the presentations of each student will be elaborated by the coordination of the TFG 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 teachers. Following the oral presentation, the committee will conduct a round of questions.

TFG elaboration circuit (TFG modality with external internships)

1. Organization chart and responsibilities

Company tutor

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

Tutor teachers

The tutor will be one of the proofreading professors or a coordinating professor of the External Internships subject. 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.

Coordination

The Coordination of the TFG modality via External Internships will be formed by one or more professors, who will also be responsible for the Coordination of the External Internships subject.

TFG Evaluation Committee

The TFG Assessment Committee will be responsible for evaluating each student's written report and oral presentation. The evaluation commissions will be called by the Coordination of the modality and will be constituted by two members chosen from the professors of the subject External Internships, one of which will be a Coordinator of the modality.

2. Elaboration of the TFG

Registration:

Registration is face-to-face and will be done once it has been accepted by a company and always before starting the project. Normally, you will enroll simultaneously in the TFG and the subject External Internships, although you can start by enrolling in External Internships and, during your performance, enroll in the TFG. The student will be able to defend his work in any one of the announcements of February, June or September of the course in which he has enrolled. Memorandum and defense dates will be similar to the rest of the TFGs and will be announced in the Moodle classroom well in advance.

TFG enrollment will remain open throughout the academic year. However, there will only be two shifts of application and assignment of companies that will coincide with those of External Internships. The 1st period is in October / November, with the beginning of the internship in the 2nd academic semester. The second period is in March / April, the beginning of the internship can be in es

tiu (beginning of July) or in the 1st semester of the following academic year.

Application and assignment of the TFG

The allocation and application mechanism is the same as for the External Internships subject.

Carrying out and monitoring the TFG

Since this type of TFG is linked to the realization of the PE, to the obligatory meeting of the student with his tutor of the UAB to talk about the PE, the student will inform him that he will do TFG + PE. The student must have a new meeting with their UAB tutor during the writing of the report, in which they will discuss the draft of the document. The tutor of the company will monitor the student as agreed in the agreement.

The TFG manuscript will have a limited extension, and will be explained in a template available at the moodle site, and it can be written with any language, catalan, spanish or english. Every manuscript should include an abstract with a maximum length of one page written with each languages catalan, spanish and english.

Deposit of written reports of work

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

Oral presentation of the TFG

The Coordination will set the dates for the oral defense of the TFG that will be made public before the enrollment period of each academic year. Specifically, three different periods of oral defenses will be scheduled on the calendar: calls for February, July and September. For each oral defense period, the schedule of each student's presentations will be prepared by the Coordination and published in the Moodle classroom in

advance. In the oral presentation, which will be held behind closed doors, the student must use computer media and will have a maximum duration of 15 minutes. The Commission that will evaluate the exhibitions will be formed by two professors of the subject External Practices. Following the oral presentation, the committee will conduct a round of questions.

METHODOLOGY OF THE MODULE OF RESEARCH WORK METHODOLOGY

The module consists of the following sessions:

1 hour long.

4 of two hours duration.

In each session, the corresponding theoretical contents will be presented and their application will be worked on in a practical way, through exercises that will be closely related to the tasks that the student will have to carry out for the elaboration of his TFG.

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
Study and elaboration of work	243	9.72	1, 4, 14, 5, 6, 2, 15, 7, 8, 10, 11, 12, 13

Assessment

TFG ASSESSMENT:

** TFG mode without external practices:

The evaluation of the TFG of each student will be carried out jointly by their teacher (s) tutor (s) and the evaluation committee. In the case of students of the double degree of Physics and Chemistry, these will be evaluated in accordance with the regulations of the degrees of Physics and Chemistry, respectively. It will include the research module methodology module, which will be equal to 10% of the final grade of the subject.

Teacher tutor: The tutors of each job will evaluate the work done and the skills acquired based on the monitoring carried out and the evidences of the meetings 1-4 prepared by their students. As a result, each tutor will have to write a valuable report of the student who will have to give to the coordination of the TFG. In this report, a follow-up note will be required that will equal 30% of the final mark of the subject. When more than one tutor takes part, the average of the different reports involved or a single joint report will be made. Security

evidence is mandatory. It is the responsibility of the student and guardians of the delivery and validation of all evidences and reports.

Evaluation commission: Based on the evaluation of the written memos and oral presentations, the evaluation commissions will judge the transversal competences acquired, the content, approach, development and degree of difficulty of the work carried out and the quality of the presentation and defense carried out. As a result, each committee will elaborate a valuative report following the guidelines of a heading prepared for the coordination of the TFG. In this report, there must be a work memo note and an oral defense note, which will equate 30% of the final grade of the subject to each of them.

Based on the notes given by the tutors and assessment commissions, the TFG coordination will calculate the final grade of the subject and make it public in the virtual space. In addition, you will select a number of jobs among the best qualifications in order to grant the honorable registration. In case of doubt, individual interviews will be made with the candidates for this qualification.

Those students who do not complete evidence 0-5 of the follow-up process will not be able to submit the TFG and will be graded as "not submitted". Students who carry out this evidence, but do not deposit the written report in the established calendar, do not make the oral defense, or its result is deficient will be qualified as "Suspense". In addition, cases of work plagiarism will also involve the automatic suspension of the TFG. In any of these cases, this will involve a new enrollment and completing and / or restarting the TFG elaboration circuit in the following year.

The follow-up of the TFG will have common guidelines for all students that facilitate the awarding mechanics and briefly describe the contents of the tutorial sessions. To this end, the teachers will have the evaluation headings and forms of the student's portfolio, which will contain guidelines on indicators to evaluate, number of follow-up actions, and their updating, memory evaluation or other, in order to establish a unified reference framework that allows a transparent evaluation.

**** TFG modality with external practices:**

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

Tutor in the company: Will emit a report / evaluation based on the student's follow-up, with a qualification that will be equivalent to 30% of the final grade of the subject.

Evaluation Committee: Through the written report and the oral presentation, the Commission will evaluate the transversal competences 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 a valuation report following the guidelines of a heading prepared by the Coordination. This report must include a work memo note (30% of the final mark of the subject) and a note of oral presentation and defense (30% of the final mark of the subject).

***** TFG modalities without or with external practices:**

To make the weighted average, a minimum score of 4 out of 10 points is required, both from the Professor Tutor or from the Tutor to the company as well as from the Court or Evaluation Committee, as well as the research methodology module.

If the grade of Professor Tutor or Tutor in the company is less than 4, the subject will have a final note of "Suspense."

If the grade of the Court or Evaluation Committee is less than 4, the subject will have a "Not evaluable" note and the student will have to rewrite the memory, present it and defend it orally in the following call

of the academic year.

The cases of plagiarism of the work will entail a qualification of "Suspense" with a note of 0 [1]. This will entail a new enrollment and complete and / or restart the TFG production circuit.

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

present the work of others as their own;
adopt words or ideas from other authors without due recognition (that is, without citing);
Do not use quotation marks on a literal date;
give incorrect information about the true source of an appointment;
the paraphrase of a source without mentioning the source (that is, unquoted);
the abusive paraphrase, even if the source is mentioned.

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

To pass the module it will be necessary to obtain a minimum final grade of 4 points. The evaluation elements that are contemplated are:

Attendance (20%). Unjustified absences will be penalized with 0.5 points.

Short questionnaire at the end of each session (20%).

Synthesis work (60%): Based on the practical tasks associated with each session, students will have to prepare a proposal (draft) of the introductory part of their TFG, as well as the bibliography searched on the subject. The content and characteristics of this proposal will be explained on the first day of class.

Reassessment: will consist of the reworking of the synthesis work. People who, having complied with the requirements of the continuous assessment, have not reached the required minimum qualification (4 points) will be eligible.

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

Bibliography

The basic bibliography will be suggested by the director of each Degree Project according to the subject matter, regardless of the bibliographical research that the student does.

Software

There is no software