

Degree	Type	Year	Semester
4313385 Industrial Chemistry and Introduction to Chemical Research	OB	0	2

## Contact

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## Prerequisites

No requirements needed

## Use of languages

Principal working language: english (eng)

## Objectives and Contextualisation

The student carries out a pilot project in basic or applied research which shall demonstrate the ability to apply knowledge and skills acquired during the Master.

## Skills

- Analyse and use the data in autonomous fashion in complex laboratory experiments and relate them with the appropriate chemical, physical or biological theories, and including the use of primary bibliographic sources.
- Be capable of working in a team and adapting to multidisciplinary teams.
- Correctly apply new information capture and organisation technologies to solve problems in professional activity.
- Correctly evaluate the risks and environmental and socio-economic impact associated to special chemical substances.
- Evaluate responsibility in the management of information and knowledge in the field of Industrial Chemistry and Chemical Research.
- Foster innovation and entrepreneurship in chemical industry and research.
- Identify information in the scientific literature using the appropriate channels and integrating said information to approach and contextualise a research issue.
- Innovate in the spaces and environments of the field of work, showing initiative and an entrepreneurial spirit.
- Operate with advanced instrumentation for chemical evaluation and structural determination.
- Show skills in analysing, describing, organising, planning and managing projects.
- Student should possess an ability to learn that enables them to continue studying in a manner which is largely self-supervised or independent
- Students should be able to integrate knowledge and face the complexity of making judgements from information which, being incomplete or limited, include reflections on the social and ethical responsibilities linked to the application of their knowledge and judgements
- Students should know how to apply the knowledge acquired and the capacity to solve problems in new or little-known areas within broader (or multidisciplinary) contexts related to their area of study
- Students should know how to communicate their conclusions, knowledge and final reasoning that they hold in front of specialist and non-specialist audiences clearly and unambiguously
- Use scientific terminology in the English language to defend experimental results in the context of the chemistry profession.

## Learning outcomes

1. Analyse the results of research in order to obtain new products or processes while evaluating their quality, and industrial and commercial viability for transfer to society.
2. Apply the specific research methodology, techniques and resources to research and produce innovative results in a certain area of specialisation.
3. Be capable of working in a team and adapting to multidisciplinary teams.
4. Correctly apply new information capture and organisation technologies to solve problems in professional activity.
5. Design advanced experiments for the study of chemical systems.
6. Draft an extensive introduction based on the latest bibliography in adequate fashion for written presentation in the English language.
7. Evaluate responsibility in the management of information and knowledge in the field of Industrial Chemistry and Chemical Research.
8. Evaluate the risks and impact associated with the use of new techniques and products in the context of an experimental research project.
9. Identify information in the scientific literature using the appropriate channels and integrating said information to approach and contextualise a research issue.
10. Innovate in the spaces and environments of the field of work, showing initiative and an entrepreneurial spirit.
11. Produce a complete research report written in the English language and orally present it in English.
12. Relate the experimental results obtained with the previous bibliography and discuss their relevance in the area of specialisation.
13. Show skills in analysing, describing, organising, planning and managing projects.
14. Student should possess an ability to learn that enables them to continue studying in a manner which is largely self-supervised or independent
15. Students should be able to integrate knowledge and face the complexity of making judgements from information which, being incomplete or limited, include reflections on the social and ethical responsibilities linked to the application of their knowledge and judgements
16. Students should know how to apply the knowledge acquired and the capacity to solve problems in new or little-known areas within broader (or multidisciplinary) contexts related to their area of study
17. Students should know how to communicate their conclusions, knowledge and final reasoning that they hold in front of specialist and non-specialist audiences clearly and unambiguously
18. Use scientific terminology in the English language to defend experimental results in the context of the chemistry profession.
19. Use the results of an experimental research project in the area of chemistry to foster innovation and entrepreneurship.
20. Use the right instrumentation in accordance with the objectives of the proposed research project.

## Content

See methodology section.

## Methodology

Supervision of the research process, written output, thesis presentation and discussion.

The final grade will be obtained from:

- 50% Oral presentation and discussion
- 20% Written output
- 30% Final report of the activities carried out by the student provided by the thesis supervisor or tutor

## Activities

Title	Hours	ECTS	Learning outcomes
<b>Type: Directed</b>			
Tutorials	5	0.2	5, 9, 14, 17, 18
<b>Type: Supervised</b>			
Supervised work by thesis advisor	150	6	3, 5, 9, 14, 16, 19
<b>Type: Autonomous</b>			
Autonomus work by student	219	8.76	2, 6, 12, 13, 14, 15, 16, 18

## Evaluation

Supervision of the research process, written output, thesis presentation and discussion.

The final grade will be obtained from:

- 50% Oral presentation and discussion
- 20% Written output
- 30% Final report of the activities carried out by the student provided by the thesis supervisor or tutor.

## Evaluation activities

Title	Weighting	Hours	ECTS	Learning outcomes
Final report by thesis advisor	30%	0	0	3, 15, 16, 18
Oral presentation and discussion	50%	1	0.04	1, 11, 14, 17, 18, 19
Written output	20%	0	0	2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 18, 20

## Bibliography

No bibliography