

## WHAT A CHEMISTRY GRADUATE CAN DO...

This First Degree in Chemistry prepares graduates for a career in the following four fields:

### Industry

Chemistry graduates interested in working in **chemical or other related industries** must have a solid background in chemistry as well as knowledge of mathematics, physics and computer science. They should have strong organizational, and management skills and be able to perform tasks required in chemistry laboratories and complex industrial installations.

### Applied Chemistry

A large number of graduate students pursue professional careers in companies outside the chemical industry but which make use of applied chemistry. These include the **electrical, food and health sectors** or others that can be accessed following competitive examinations such as **Customs Chemists** or **specialized staff at the National Institute of Toxicology and Forensic Sciences**. In addition to their knowledge of chemistry, graduates must develop the ability to design and develop chemistry laboratory tasks, among others.

### Research and Teaching at Higher Education Institutions

Chemistry graduates are qualified to pursue research or teaching careers at public institutions such as **universities, the Spanish National Research Council (CSIC) or public research institutes** as well as in a growing number of **private companies dedicated to R&D&I activities**. The competences of chemistry graduates include the capacity to perform research and in-depth studies in all areas of chemistry, as well as automated data management skills and an ability for critical analysis.

### Non-university Teachers

Graduates can pursue a teaching career at **public and private secondary schools** given that they not only acquire a sound knowledge of chemistry, but other skills such as the ability to transmit and disseminate chemistry-related concepts, theories and principles.

## WHY STUDY CHEMISTRY?

Because you are interested in science and curious to learn about specific aspects such as **developing new materials for alternative energy sources** or **the underlying principles and properties of renewable energies**.

Because you would like to **develop less contaminant bio-fuels** and **improve the use of agriculture and urban waste** to achieve **a more sustainable world**.

Because you want to **implement innovative methods for the analysis** of clinical, food or environmental samples, among others.

If these and other topics such as macroscopic and microscopic properties or reactivity-based changes interest you, choose

## CHEMISTRY



## Chemistry

More information at:

<http://www.uco.es/ciencias/>



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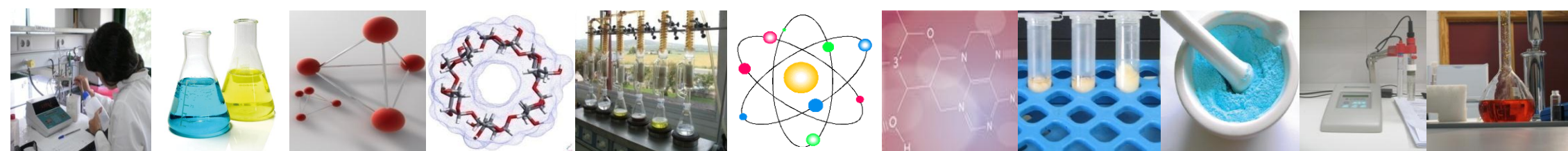
UNIVERSIDAD DE CORDOBA



**UNIVERSITY OF CORDOBA**  
**School of Science**

**First Degree in**  
**CHEMISTRY**





## LEARNING OUTCOMES

The competences to be acquired by chemistry students upon graduation are set out under the agreements of the Andalusia Commission on the First Degree in Chemistry based on the White Paper of the First Degree in Chemistry.

**The basic competences** are in accordance with Royal Decree 1393/2007 on the Spanish Higher Education Qualifications Framework (MECES).

**Specific competences** are aimed at acquiring knowledge of general and basic aspects of chemistry and the ability to apply this knowledge to qualitative and quantitative problem solving as well as good scientific practices, and interpreting chemical data correctly.

## GENERAL OBJECTIVES OF THE FIRST DEGREE

1. Foment an interest in learning chemistry and knowledge of its applications among students. Encourage students to become involved in the intellectually exciting and satisfying experience of studying and learning new concepts.
2. Provide students with a solid and comprehensive background in chemistry and the practical skills required of them.
3. Train students to apply their **theoretical and practical knowledge of chemistry to problem solving**.
4. Develop valuable skills among students such as **analytical thinking, foreign language acquisition, decision-making, teamwork and reasoning** for use in chemistry and other fields.
5. Provide students with the necessary **knowledge and skills to further their studies in an independent manner in specialized fields of chemistry or multidisciplinary contexts**.
6. Enable students to **appreciate the importance of Chemistry in the industrial, economic, environmental and social spheres**.

## COURSE STRUCTURE

FIRST YEAR	
1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester
<ul style="list-style-type: none"> <li>▪ Biology</li> <li>▪ Physics I</li> <li>▪ General Mathematics</li> <li>▪ Atom Structure and Chemical Bonding</li> <li>▪ Chemical Balance and Changes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Crystallography and Applied Mineralogy</li> <li>▪ Physics II</li> <li>▪ Numerical Calculus and Statistics</li> <li>▪ Chemical Balance and Solution Reactivity</li> <li>▪ Organic Functional Groups and Stereochemistry</li> </ul>
SECOND YEAR	
1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester
<ul style="list-style-type: none"> <li>▪ Introduction to Analytical Chemistry</li> <li>▪ Quantum Chemistry</li> <li>▪ Inorganic Chemistry</li> <li>▪ Organic Chemistry I</li> <li>▪ Agricultural and Agrifood Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>▪ Analytical Separation Techniques</li> <li>▪ Thermodynamics</li> <li>▪ Inorganic Chemistry Experimentation</li> <li>▪ Organic Chemistry II</li> <li>▪ Biochemistry</li> </ul>
THIRD YEAR	
1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester
<ul style="list-style-type: none"> <li>▪ Instrumental Analysis I</li> <li>▪ Kinetics and Electrochemistry</li> <li>▪ Advanced Inorganic Chemistry</li> <li>▪ Organic Synthesis</li> <li>▪ Molecular Biology and Biochemistry</li> <li>▪ Chemical Engineering I</li> </ul>	<ul style="list-style-type: none"> <li>▪ Instrumental Analysis II</li> <li>▪ Advanced Physical Chemistry</li> <li>▪ Chemistry of Transition Elements</li> <li>▪ Advanced Organic Chemistry</li> <li>▪ Optional course 1</li> </ul>
FOURTH YEAR	
1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester
<ul style="list-style-type: none"> <li>▪ Chemical Engineering II</li> <li>▪ Chemistry, History and Society</li> <li>▪ Economics and Business Management</li> <li>▪ Advanced Chemistry</li> <li>▪ Optional course 2</li> </ul>	<ul style="list-style-type: none"> <li>▪ Materials Chemistry</li> <li>▪ Chemistry Projects</li> <li>▪ Final Project</li> <li>▪ Optional course 3</li> </ul>
OPTIONAL COURSES	
<b>Optional course 1 (choose one)</b>	
<ul style="list-style-type: none"> <li>▪ Organic and Pharmacochemical Structure Determination</li> <li>▪ Applied Analytical Chemistry</li> </ul>	
<b>Optional course 2 (choose one)</b>	
<ul style="list-style-type: none"> <li>▪ Macromolecules and Colloids</li> <li>▪ Inorganic Materials in the Chemical Industry</li> </ul>	
<b>Optional course 3 (choose one)</b>	
<ul style="list-style-type: none"> <li>▪ Industrial Chemistry</li> <li>▪ Applied Computational Chemistry</li> <li>▪ Quality Systems in Analytical Laboratories</li> </ul>	<ul style="list-style-type: none"> <li>▪ Technological Innovations in Inorganic Materials</li> <li>▪ Industrial Organic Chemistry</li> <li>▪ Food Processing</li> </ul>

## INTERNSHIPS

Doing an internship at outside institutions and companies gives students the opportunity to apply the knowledge and skills they have acquired at university. It is the perfect complement to formal academic training and a highly inspiring experience that is particularly important for those undertaking a scientific and technical degree. The UCO School of Science recognises credits earned through internships. The School of Science currently offers more than 350 internship placements at local, regional and national companies and institutions.

## NATIONAL AND INTERNATIONAL MOBILITY PROGRAMMES

Academic mobility is a fundamental element in the personal and academic development of students. Mobility improves job opportunities, while fostering respect for diversity and the understanding of different cultures. The UCO School of Science participates in a wide range of national and international student mobility programmes to aid students in enhancing their academic training. These include the SICUE-SENECA Programme for mobility between Spanish universities and the ERASMUS and Leonardo da Vinci Programmes in Europe for education and training internships. Other mobility programmes are also available in America and Asia.

## MASTER'S AND PhD PROGRAMMES

The First Degree in Chemistry provides students direct access to the job market and the opportunity to further their education through Master's or PhD programmes such as those offered by the University of Cordoba.

## RESOURCES AND SERVICES

A large number of facilities and services are available on the UCO Rabanales Campus:

- Lecture halls, interactive classrooms, computer rooms and laboratories
- Library and study halls
- Cafeterias
- Banks
- Job information office
- Copy service
- Lucano Student Residence Hall
- Mental Health Service
- Health Care Unit
- Sports facilities (UCOdeporte)
- Wifi