

## ELECTROQUÍMICA. CIÈNCIA I TECNOLOGIA (2019-20)

<b>Código:</b> D080	<b>Fecha de aprobación:</b> 03/04/2014	<b>Precio:</b> 39,27 1st registration credits
<b>Créditos:</b> 60	<b>Título:</b> Master (ECTS)	

### RAMA

Sciences

### PLAN

UNIVERSITY MASTER'S DEGREE IN ELECTROCHEMISTRY. SCIENCE & TECHNOLOGY

### TIPO DE ENSEÑANZA

Face-to-face

### CENTROS DONDE SE IMPARTE

Faculty of Science

### ESTUDIO IMPARTIDO CONJUNTAMENTE CON

UNIVERSITAT D'ALACANT - UNIVERSIDAD DE ALICANTE (SPAIN)  
UNIVERSITAT AUTÒNOMA DE BARCELONA (SPAIN)  
UNIVERSIDAD AUTÓNOMA DE MADRID (SPAIN)  
UNIVERSITAT DE BARCELONA (SPAIN)  
UNIVERSIDAD DE BURGOS (SPAIN)  
UNIVERSIDAD POLITÉCNICA DE CARTAGENA (SPAIN)  
UNIVERSIDAD DE CÓRDOBA (SPAIN)  
UNIVERSIDAD DE MURCIA (SPAIN)  
UNIVERSITAT DE VALÈNCIA ESTUDI GENERAL (SPAIN)

### FECHAS DE EXAMEN

[Acceda al listado de fechas de examen para esta titulación.](#)

## PLAN DE ESTUDIOS OFERTADO EN EL CURSO 2019-20

Leyenda: No ofertada Sin docencia

### UNIVERSITY MASTER'S DEGREE IN ELECTROCHEMISTRY. SCIENCE & TECHNOLOGY

#### COMPULSORY SUBJECTS

35 créditos

Curso	Título	Créditos	Subject
1	COMPULSORY	4	<a href="#">48800 - FUNDAMENTALS OF ELECTROCHEMISTRY II</a>
1	COMPULSORY	10	<a href="#">48801 - BASIC EXPERIMENTATION IN ELECTROCHEMISTRY</a>
1	COMPULSORY	5	<a href="#">48802 - ADVANCED EXPERIMENTATION IN ELECTROCHEMISTRY</a>
1	COMPULSORY	6	<a href="#">48808 - FUNDAMENTALS OF ELECTROCHEMISTRY I</a>
1	COMPULSORY	6	<a href="#">48809 - TECHNOLOGIC APPLICATIONS OF ELECTROCHEMISTRY I</a>
1	COMPULSORY	4	<a href="#">48810 - TECHNOLOGIC APPLICATIONS OF ELECTROCHEMISTRY II</a>

#### OPTIONAL SUBJECTS

10 créditos

Curso	Título	Créditos	Subject
1	OPTIONAL	3	<a href="#">35827 - SURFACE ELECTROCHEMISTRY</a>
1	OPTIONAL	3	<a href="#">35828 - ELECTROCHEMISTRY OF SEMICONDUCTOR MATERIALS</a>
1	OPTIONAL	3	<a href="#">35829 - ELECTROCATALYSIS, ELECTROCATALYTIC MATERIALS AND APPLICATIONS IN ELECTROCHEMISTRY</a>
1	OPTIONAL	3	<a href="#">45409 - ENERGY VECTOR HYDROGEN II: USES</a>
1	OPTIONAL	10	<a href="#">48811 - INTRODUCTION TO RESEARCH</a>
1	OPTIONAL	3	<a href="#">48812 - APPLIED CYCLIC VOLTAMMETRY</a>
1	OPTIONAL	4	<a href="#">48813 - APPLIED ELECTROCHEMISTRY</a>
1	OPTIONAL	3	<a href="#">48814 - ELECTROPOLIMERIZATION</a>
1	OPTIONAL	3	<a href="#">48815 - BIOMIMETIC PROPERTIES ON SOFT MATTER ELECTROCHEMISTRY</a>
1	OPTIONAL	4	<a href="#">48816 - ELECTROCHEMICAL AND BIOMIMETIC DEVICES</a>
1	OPTIONAL	3	<a href="#">48817 - SENSORS AND BIOSENSORS</a>
1	OPTIONAL	6	<a href="#">48819 - ACCUMULATION OF ENERGY AND FUEL CELLS</a>
1	OPTIONAL	5	<a href="#">48820 - SCREEN-PRINTED SENSOR AND BIOSENSOR CONSTRUCTION</a>
1	OPTIONAL	5	<a href="#">48821 - SPECTROELECTROCHEMISTRY EXPERIMENTATION</a>
1	OPTIONAL	6	<a href="#">48822 - PREPARATION OF MATERIALS</a>
1	OPTIONAL	3	<a href="#">48823 - SYNTHESIS AND CHARACTERIZATION OF NANOPARTICLES</a>
1	OPTIONAL	6	<a href="#">48824 - CHARACTERISATION TECHNIQUES</a>
1	OPTIONAL	5	<a href="#">48825 - CATALYSTS FOR ENERGY AND THE ENVIRONMENT</a>
1	OPTIONAL	3	<a href="#">48826 - THEORETICAL AND COMPUTATIONAL CHEMISTRY</a>
1	OPTIONAL	3	<a href="#">48827 - MACROMOLECULES: STRUCTURE AND PROPERTIES</a>
1	OPTIONAL	6	<a href="#">48830 - TRAINEESHIP</a>
1	OPTIONAL	4	<a href="#">48831 - TRANSVERSAL COMPETENCES</a>
1	OPTIONAL	4	<a href="#">48832 - CHEMICAL KINETICS OF CHARGE TRANSFER PROCESSES</a>
1	OPTIONAL	6	<a href="#">48833 - HYDROGEN, PRODUCTION, ACCUMULATION AND USE</a>
1	OPTIONAL	5	<a href="#">48834 - PHOTOVOLTAIC CONVERSION AND PHOTOELECTROCHEMISTRY</a>
1	OPTIONAL	4	<a href="#">48835 - ADVANCED ELECTROCHEMICAL: FUNDAMENTALS AND APPLICATIONS</a>
1	OPTIONAL	3	<a href="#">48836 - MOLECULAR ORGANIZATION AND MOLECULAR DEVICES</a>
1	OPTIONAL	3	<a href="#">48837 - ADVANCED TECHNIQUES IN MOLECULAR SPECTROSCOPY</a>

#### MASTER FINAL WORK

15 créditos

Curso	Título	Créditos	Subject
1	END OF MASTER WORK	15	<a href="#">48807 - MASTER THESIS</a>

Superado este bloque se obtiene

**MASTER'S DEGREE IN ELECTROCHEMISTRY. SCIENCE AND TECHNOLOGY**

## OBJECTIVES

- Provide access to a doctoral programme, such as the doctorate in ECyT (Electrochemistry: Science and Technology), with a sufficient guarantee of basic and applied knowledge in the field of Electrochemistry enabling students to contribute to future research groups with doctors who carry out their activities in the field of Electrochemistry.
- Contribute to the training of specialists in Electrochemistry, a subject which has received minimal attention in the current undergraduate degree programme, and is one of the cornerstones for advancements related to new technological challenges.
- Promote mobility and interaction among students of the Master's degree in the field of Electrochemistry, contact with other universities, research centres and companies which are active in the field.



- [Structure of the Master's degree: credits and subjects](#)
- [Distribution of subjects by year/ term](#)
- [General course programme](#)

### STRUCTURE OF THE MASTER'S DEGREE: CREDITS AND SUBJECTS

Subject Type	Credits
Compulsory (OB)	35
Optativas (OP)	10
Master's Degree Final Project (TFM)	15
<b>TOTAL CREDITS</b>	<b>60</b>

### DISTRIBUTION OF SUBJECTS BY YEAR / TERM

FIRST TERM 30 ECTS			SECOND TERM 30 ECTS		
SUBJECT	TYPE	ECTS	SUBJECT	TYPE	ECTS
FUNDAMENTALS OF ELECTROCHEMISTRY I	OB	6	ADVANCED EXPERIMENTATION IN ELECTROCHEMISTRY	OB	5
FUNDAMENTALS OF ELECTROCHEMISTRY II	OB	4	*OPTIONAL SUBJECTS	OP	10
TECHNOLOGICAL APPLICATIONS OF ELECTROCHEMISTRY I	OB	6			
TECHNOLOGICAL APPLICATIONS OF ELECTROCHEMISTRY II	OB	4			
BASIC EXPERIMENTATION IN ELECTROCHEMISTRY	OB	10	MASTER'S DEGREE FINAL PROJECT	TFM	15

*OPTIONAL SUBJECTS	ECTS	University
Introduction to research	10	UAB
Spectroelectrochemistry experimentation	5	UBu
Applied cyclic voltammetry	3	UMu
Applied electrochemistry	4	US
Electro-polymerisation	3	UPCT
Bio-mimetic electrochemical properties in soft materials	3	UPCT
Electrochemical and bio-mimetic devices	4	UPCT

Sensors and biosensors	3	UMu
Electrochemical Advanced. Foundations and Applications	3	UCo
Energy accumulation and fuel cells	6	UAM
Surface electrochemistry	3	UA
Electrocatalysis: electrocatalytic materials and application to electrochemistry	3	UA
Electrochemistry of semiconductor materials	3	UA
Energy Vector Hydrogen II: Uses	3	UA
Construction of sensors and screen-printed Biosensors	5	UBu
Photovoltaic and photo-electrochemical conversion	5	UAM
Preparation of materials	6	UB
Characterisation techniques	6	UB
Catalysts for energy and the environment	5	US
Theoretical and computational chemistry	3	UMu
Macromolecules: structure and properties	3	UMu
Molecular organisation and Molecular Devices	3	UCo
Technicians Advanced in Molecular Spectroscopy	3	UCo
Work Experience	6	UVEG
Transversal competences	4	UVEG
Chemical kinetics of charge transfer processes	4	US
Hydrogen: production, stockpiling and use	6	UAM

## GENERAL COURSE PROGRAMME

The programme has a tri-modular structure:

- Fundamental
- Specialisation
- Master's Degree Final Project

1. **FUNDAMENTAL MODULE:** Consists of three compulsory subjects (theory and practice):

a. Fundamentals of electrochemistry (10 ECTS)

b. Technological applications of electrochemistry (10 ECTS)

c. Basic experimentation in electrochemistry (10 ECTS)

The subject "Fundamentals of electrochemistry" is subdivided into two essential subjects related to the field of electrochemistry which provide focus and enable students to gauge their respective levels, whatever their academic background in experimental sciences. It is important to emphasize that the subject "Electrochemistry" is virtually non-existent in the current undergraduate degree programmes. Hence the need to include subjects such as "Fundamentals of electrochemistry I" (6 ECTS) and "Fundamentals of electrochemistry II" (4 ECTS). The second subject in the module is "Technological applications of electrochemistry" and with its distinct focus on technology and its applications, the subject area is developed through two subjects: "Technological applications of electrochemistry I" (6 ECTS) and "Technological applications of electrochemistry II" (4 ECTS).

These two subjects would be taught intensively at a single university for a period of 6 weeks. Students will develop part of their studio work at the university and the rest is to be completed after this 6 week period, during which they can use the virtual tutoring provided through ICT facilities. The Master's Academic Coordinating Committee will annually choose the university campus that will be responsible for the delivery of these subjects for the following year.

The third subject "Basic experimentation in electrochemistry" is a single practical subject comprising 10 ECTS. Given the extra travel expenses arising out of additional student relocations, the Master's Academic Coordinating Committee may agree to allow students to take the third subject either in the same university where they took the first two subjects of this module, or in the participating university of the joint degree programme.

This module is intended to produce a series of core and specific skills common to all students in the Master's degree programme. It also aims to provide students with a multidisciplinary approach that enables problem solving from different perspectives.

**2. SPECIALISATION MODULE:** Comprises 6 optional subjects from a series of optional subjects amounting to a maximum of 118 credits. These subjects represent the compendium of subjects offered by all the universities. Students must choose at least 10 ECTS from subjects in the specialisation module, which enables students to choose from a wide range of universities, according to their preferences and ability to travel and relocate.

**3. MASTER'S DEGREE FINAL PROJECT:** 15 ECTS.

- [Entry Requirements](#)
- [Admisión and Assessment Criteria](#)
- [Pre-enrolment and Enrolment](#)
- [Number of places](#)

## ENTRY REQUIREMENTS

According to the Regulations of the University of Alicante, the following requirements must be complied to have access to official taught Master's degrees:

1. To be in possession of a SPANISH OFFICIAL GRADUATE DEGREE CERTIFICATE or other issued by an institution of higher education within the [EHEA](#) (European Higher Education) that enables the holder to have access to Master's degrees in the issuing.
2. To be in possession of an officially approved FOREIGN HIGHER EDUCATION DEGREE CERTIFICATE that had been recognised as equal to the degree that allows access to the requested studies.
3. To be in possession of a UNIVERSITY DEGREE CERTIFICATE obtained in a University or Higher Education Institution of COUNTRIES OUTSIDE THE EHEA, without the prior approval of their studies. In this case, the following should be considered:
  - Non-recognised degree certificates shall require a technical report showing an equivalence statement issued by the University of Alicante ([ContinUA – Continuing Education Centre](#)), for which the [corresponding fee](#) should be paid.
  - Access through this way does under no circumstances imply prior official approval of the holder's degree certificate, nor its recognition for purposes other than studying a master's degree.

## ADMISSION AND ASSESSMENT CRITERIA

**Admission profile:** Applicants must be in possession of one of the following academic titles:

- An official Spanish university degree in Chemistry, Engineering or related areas as established by the Master's Academic Coordinating Committee (CCAM)
- Chemical Engineering or Engineering Degrees or related areas obtained in accordance with programmes of study existing prior to the enactment of Royal Decree 1393/2007.
- An official university degree issued by a institution of higher education from the European Higher Education Area (EHEA) which can be homologated to the degrees described in points 1 and 2, and where the degree qualifies the holder for admission to a Master's degree in the awarding country.
- A non-homologated foreign degree that accredits a level of education equivalent to the official Spanish university degrees indicated in points 1 and 2 and where the degree qualifies the holder for admission to a Master's degree in the awarding country.

### Admission Criteria:

Special admission tests are not required.

In the event that demand for places exceeds the number of places offered, the Master's Academic Coordinating Committee (CCAM) will select students on the basis of following criteria:

- a) Degree in Chemistry, Engineering or related areas (50%);
- b) Overall academic record (15%);



- c) Academic results in subjects related to the Master's (20%)
- d) Professional experience (15%).

## PRE-ENROLMENT AND ENROLMENT

### PRE-ENROLMENT [+info](#)

Students who wish to study for an Official Master's Degree at the UA should complete pre-enrolment in accordance with the deadlines and conditions specified annually.

### ENROLMENT [+info](#)

Following publication of the definitive list of those admitted to the course, applicants will receive an email containing a password which will serve as a User ID, enabling them to enrol via the **Campus Virtual** in accordance with the deadlines and conditions established annually.

In the registration process, the **documents issued abroad** must be official, duly notarised and translated. Further information:

- <http://sga.ua.es/en/academic-regulations/legalizacion/legalization-of-documents.html>

## NUMBER OF PLACES

COURSE	NUMBER OF PLACES
2012-13	40
2013-14	40
2014-15	40
2015-16	40
2016-17	40

**TIMESCALE FOR IMPLEMENTATION**

Academic year	Implementation of the Master's degree
2012-2013	1 <sup>st</sup> Year

- [Verified Report](#)
- [Resolution from the Universities Council: Positive verification](#)
- [Resolution from the Universities Council: Accreditation renewal](#)
- [Authorization from the Valencian Government](#)

## INTERNAL QUALITY GUARANTEE ASSURANCE (SGIC) OF THE MASTER'S DEGREE

- Structure of the Quality Unit
  - [Committee for Internal Quality Assurance.](#)
  - [Other Committees](#)
- [SGIC Handbook](#)
- [Procedures](#)
  - [Strategic \(PE\)](#)
  - [Key \(PC\)](#)
  - [Support\(PA\)](#)
  - [Measurement \(PM\)](#)
- [SGIC Management \(Access to ASTUA\)](#) 

## DEGREE TRACKING

- [Self Reports UA](#)
- [External Reports AVAP](#)
- [Other Reports](#)
- [Improvement Plans](#)
- [Progress and learning results](#)

Information about the Centre	General information for students
<ul style="list-style-type: none"> <li>• <b>Set General web Master</b></li> <li>• <b>Faculty of Sciencies</b></li> </ul> <p>Campus de San Vicente del Raspeig Ctra. de Alicante s/n 03690 San Vicente del Raspeig (Alicante) Telephone:+ 34 96 590 3557 Fax:+ 34 96 590 3781 <a href="mailto:facu.ciencias@ua.es">facu.ciencias@ua.es</a> <a href="http://ciencias.ua.es/en/">http://ciencias.ua.es/en/</a></p> <ul style="list-style-type: none"> <li>• <b>Department of Organic Chemistry</b></li> </ul> <p>Campus de San Vicente del Raspeig Ctra. de Alicante s/n 03690 San Vicente del Raspeig (Alicante) Telephone:+ 34 96 590 9814 Fax:+ 34 96 590 9814 <a href="mailto:iue@ua.es">iue@ua.es</a> <a href="http://iue.ua.es/en/">http://iue.ua.es/en/</a></p> <ul style="list-style-type: none"> <li>• <b>Life Long Learning Centre (ContinUA)</b></li> </ul> <p><b>Only for pre-enrolment formalities</b></p> <p>Germán Bernácer Building. Ground Floor Telephone: + 34 96 590 9422 Fax: + 34 96 590 9442 <a href="mailto:continua@ua.es">continua@ua.es</a> <a href="https://web.ua.es/en/continua/">https://web.ua.es/en/continua/</a></p>	<ul style="list-style-type: none"> <li>• <a href="#">Grants and assistance</a></li> <li>• <a href="#">Accommodation</a></li> <li>• <a href="#">Student refectories and cafeterias</a></li> <li>• <a href="#">Transport</a></li> <li>• <a href="#">Emergency medical care</a></li> <li>• <a href="#">Insurance</a></li> <li>• <a href="#">Services for students with special needs</a></li> <li>• <a href="#">Student representation and participation</a></li> <li>• <a href="#">University student identity card (TIU)</a></li> <li>• <a href="#">Frequently asked questions</a></li> </ul>
UA: General Regulations	+ Information about qualifications
<ul style="list-style-type: none"> <li>• <a href="#">Academic regulations and procedures of the University of Alicante</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Official State Gazette (BOE) on publication of course programmes Modification</a></li> <li>• <a href="#">Own Web</a></li> <li>• <a href="#">Information pamphlet</a></li> <li>• <a href="#">Details title on the RUCT</a></li> </ul>