Teaching Guide					
Identifying Data					2016/17
Subject (*)	Profundización en Química Analítica			Code	610509001
Study programme	Mestrado en Investigación Química e Química Industrial (plan 2016)				
Descriptors					
Cycle	Period	Year		Type	Credits
Official Master's Degree	Yearly	First		Obligatoria	3
Language	Spanish				
Teaching method	Face-to-face				
Prerequisites					
Department	Química Analítica				
Coordinador	Muniategui Lorenzo, Soledad		E-mail	soledad.muniategui@udc.es	
Lecturers	Carlosena Zubieta, Alatzne Muniategui Lorenzo, Soledad		E-mail	alatzne.carlosena@udc.es soledad.muniategui@udc.es	
Web					
General description	The aim of this course is the acquisition of a complete and integrated training of analytical methods along the entire analytical process including the study of methods for sampling, sample preparation, determination of analytes and treatment and interpretation of results. For this will be explained to the students an overview of analytical methods and their selection and application to solving real problems. This subject is key in the module of Advanced Training Obligatory as they complete the study of analytical chemistry taught in the Degree in Chemistry.				

Study programme competences / results	
Code	Study programme competences / results
A1	Define concepts, principles, theories and specialized facts of different areas of chemistry.
A2	Suggest alternatives for solving complex chemical problems related to the different areas of chemistry.
A4	Innovate in the methods of synthesis and chemical analysis related to the different areas of chemistry
B1	Possess knowledge and understanding to provide a basis or opportunity for originality in developing and / or applying ideas, often within a research context
B2	Students should apply their knowledge and ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.
B4	Students should be able to communicate their conclusions, and the knowledge and the reasons that support them to specialists and non-specialists in a clear and unambiguous manner
B5	Students must possess learning skills to allow them to continue studying in a way that will have to be largely self-directed or autonomous.
B7	Identify information from scientific literature by using appropriate channels and integrate such information to raise and contextualize a research topic
B10	Use of scientific terminology in English to explain the experimental results in the context of the chemical profession
B11	Apply correctly the new technologies to gather and organize the information to solve problems in the professional activity.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Acquire a complete and integrated training of analytical methods used throughout the analytical process including the study of methods for sampling, sample preparation, determination of analytes, and processing and interpretation of results.	AC1	BC1 BC2 BC5 BC10	

Overview of analytical methods and their selection and application to solving real problems.	AC2 AC4	BC4 BC7 BC11	

Contents	
Topic	**Sub-topic**
Topic 1	Trends in Analytical Chemistry.
Topic 2	Automation and miniaturization in Analytical Chemistry
Topic 3	Optimization and validation of analytical methods through chemometrics.

Planning				
Methodologies / tests	**Competencies / Results**	**Teaching hours (in-person & virtual)**	**Student?s personal work hours**	**Total hours**
Guest lecture / keynote speech	A1 B1 B5 B10	16	24	40
Seminar	A2 A4 B2 B4 B7 B11	5	15	20
Supervised projects	A2 B1 B2 B4 B7 B11	3	9	12
Mixed objective/subjective test	A1 A2 B1 B2 B4	2	0	2
Personalized attention		1	0	1
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	**Description**
Guest lecture / keynote speech	The teacher will present the fundamental contents of each of the topics. For better learning, students will have teaching materials suitable for your personal preparation. All students can consult the teacher any aspect of the matter in the tutorial schedule established for this purpose. He taught in face classes.
Seminar	In the seminars the teacher will be clarified some issues addressed in the classroom, especially related to the practical application of the methodologies used. Students must work with scientific papers in English, with regulations, reports, etc. from which they must to extract and interpret information required for discussion in the classroom sessions.
Supervised projects	Students should develop, deliver and present work and in the corresponding session as presented and discussed about it. Students who have particular difficulty with the contents should contact the teacher to receive the necessary support. They are sessions. He taught in face classes.
Mixed objective/subjective test	A final exam will be done to assess the degree of learning both the theoretical and practical.

Personalized attention	
Methodologies	**Description**
Supervised projects Seminar	Throughout the course the teacher resolves any doubts on the subject that the student needs. Students with recognition of part-time dedication and academic assistance waiver regime will be treated in tutoring (by appointment)

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
Supervised projects	A2 B1 B2 B4 B7 B11	guided academic activities and exposure are evaluated.	30

Mixed objective/subjective test	A1 A2 B1 B2 B4	This test will consist of theoretical questions and problems to assess the degree of learning from the contents of the subject.	55
Guest lecture / keynote speech	A1 B1 B5 B10	student participation is valued in the classroom	5
Seminar	A2 A4 B2 B4 B7 B11	work and active student participation is valued	10

Assessment comments
-The student will obtain the qualification of not submitted when don`t make the supervised project and not presented to the mixed test. As regards the successive academic years, the teaching-learning process, including continuous assessment, refers to an academic course and, therefore, would comezar a new course, including all activities and procedures the Assessment that is scheduled for that course. For students with part-time dedication and academic assistance waiver regime. in the event that the student can not perform all activities or continuous assessment tests, the teacher take appropriate measures to avoid prejudicing their qualification.

Sources of information	
Basic	- R. Kellner, J. M. Mermet, M. Otto, M. Valcarcel y H. M. Widmer, Eds (2004). ?Analytical Chemistry: A Modern Approach to Analytical Science?. Ed. Wiley-VCH
Complementary	- Massart D.L., Vandegiste B.G.M., Buydens L.M.C., De Jong S., Lewi P.J., Smeyers-Verbeke, J. (1997). Handbook of chemometrics and qualimetrics. Part A.. Elsevier Science. Amsterdam - Miller J.C., Miller J.N. (2002). Estadística y Quimiometría para Química Analítica. 2ª Ed. Prentice Hall. Madrid. - Ramis Ramos G., García Álvarez-Coque M.C. (2001). Quimiometría. Síntesis. Madrid. - Valcárcel M., Cárdenas M.S (2000). Automatización y Miniaturización en Química Analític. Ed. Springer.

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Other comments

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.