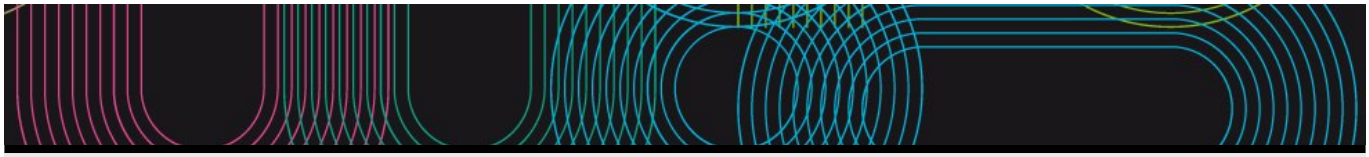

IDENTIFYING DATA				
Pharmaceutical chemistry				
Subject	Pharmaceutical chemistry			
Code	V11G200V01903			
Study programme	(*)Grao en Química			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	2nd
Teaching language				
Department				
Coordinator	Terán Moldes, María del Carmen			
Lecturers	Moldes Moreira, Diego Terán Moldes, María del Carmen			
E-mail	mcteran@uvigo.es			
Web				
General description	The matter is allocated to contribute to the students basic knowledges of Pharmaceutical Chemistry, a science *interdisciplinar to horse between distinct disciplines of chemical content and of biological content, whose aim is the study of the compounds *bioactivos and in particular his discovery, development, identification and mechanism of action to molecular level.			

Competencies	
Code	
A1	Students have demonstrated knowledge and understanding in a field of study that builds upon their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study
A3	Students have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include reflection on relevant social, scientific or ethical issues
A4	Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences
A5	Students have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy
C19	Apply knowledge and understanding to solve basic problems of quantitative and qualitative nature
C20	Evaluate, interpret and synthesize data and chemical information
C22	Process and perform computational calculations with chemical information and chemical data
C23	Present oral and written scientific material and scientific arguments to a specialized audience
D1	Communicate orally and in writing in at least one of the official languages of the University
D3	Learn independently
D4	Search and manage information from different sources
D5	Use information and communication technologies and manage basic computer tools
D7	Apply theoretical knowledge in practice
D8	Teamwork
D9	Work independently
D10	Work at a national and international context
D12	Plan and manage time properly
D13	Make decisions
D14	Analyze and synthesize information and draw conclusions
D15	Evaluate critically and constructively the environment and oneself
D16	Develop an ethical commitment
D17	Develop concern for environmental aspects and quality management

Learning outcomes	
Expected results from this subject	Training and Learning Results

Differentiate general concepts of Pharmaceutical Chemistry eat: drug, drug, medicine, farmacological target.	A4	C20 C23	D1 D4 D5 D14
Differentiate the types of receptors, as well as a drug *agonista of an antagonist.	A4 A5	C20 C23	D1 D3 D4 D5 D7 D9 D13 D14
Relate the physical properties-chemical of the drugs with his properties *farmacocinéticas.	A1 A3 A5	C19 C20 C22 C23	D1 D3 D5 D7 D8 D14
Differentiate the technicians of *farmacomodulación.	A3 A5	C19 C20 C23	D1 D4 D5 D7 D8
Differentiate an agent *quimioterápico of an agent *farmacodinámico	A3 A4 A5	C19 C20 C23	D1 D3 D4 D7 D9
Familiarise with the most recent tools in the design of drugs: combinatory chemistry and computer-aided design (methods *QSAR and *Docking)	A3 A5	C19 C20 C22 C23	D1 D3 D4 D5 D8 D12 D13 D15 D16
Describe the methods of structural analysis *involucrados in the design of drugs and differentiate the type of information that provide	A3 A5	C19 C20 C22 C23	D1 D3 D5 D7 D9 D14 D15
Identify the different forms of *vehiculización of drugs and his foundation	A1 A3 A4 A5	C19 C20 C23	D1 D3 D4 D9 D14
Identify the variables of formulation and of composition in the preparation of suspensions and emulsions, and describe his characteristic properties and the phenomena that cause his unsteadiness	A3 A5	C19 C20 C23	D1 D3 D9 D13 D14
Recognise the main stages of the processes *fermentativos and enzymatic applied to the production of drugs, including so much the phases of production as of purification	A3 A5	C19 C20 C22 C23	D1 D3 D4 D7 D8 D12 D14 D15

Apply the basic principles of security and control of the pollution in operations and processes oriented to the production of drugs	A3 A5	C19 C20 C23	D1 D3 D5 D8 D10 D13 D16 D17
Explain the sampling, *pretratamiento and preparation of sample, as well as the appropriate instrumental technicians for the analysis of prime matters, pharmaceutical and compound formulations *bioactivos in biological means	A3 A5	C19 C20 C22 C23	D1 D3 D8 D13 D14

Contents	
Topic	
Subject 1. Introduction: general appearances of Pharmaceutical Chemistry	Definitions, aims and scope of the Pharmaceutical Chemistry. *Nomeclatura Of drugs and systems of classification. Agents *quimioterápicos and agents *farmacodinámicos
Subject 2. Farmacological targets	Types of farmacological targets. You interact drug-target. Acids *nucéicos, enzymes and *proteinas like targets of drugs.
Subject 3. Receptors like targets of drugs	Types of receptors. Drugs *agonistas, antagonistic and *agonistas reverse. Measure and expression of the farmacological effect. Tachyphylaxis and tolerance
Subject 4. *Farmacocinética And appearances related	Absorption and transport through biological membranes, rules of *Lipinski, *biodisponibilidad. Metabolism, *profármacos. Excretion. Roads of administration and pharmaceutical forms.
Subject 5. Discovery, design and development of drugs	Strategies of research of heads of series, *serendipia, sifted systematic, rational design. *Farmacomodulación. Patents. Essays *preclinicos and clinical. Chemical development.
Subject 6. Strategies of design of drugs	*Modelado Molecular, indirect methods (*QSAR, design of *fármacóforo), direct methods (*docking).
Subject 7. Preparation, analysis and purification of drugs	Production in the pharmaceutical industry. Processes *fermentativos. Processed of drugs.

Planning			
	Class hours	Hours outside the classroom	Total hours
Master Session	26	52	78
Seminars	13	39	52
Outdoor study / field practices	3	3	6
Short answer tests	2	4	6
Long answer tests and development	2	6	8
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies	
	Description
Master Session	In these classes the professor/to will present of form structured the general contents of the program, doing emphasis in the appearances but important or of but difficult understanding. Besides, the professor/to will put to disposal of the *alumnado, with *antelación and through the platform *Tem@, the material that will use in said sessions. It recommends to the *alumnado that work previously this material and that consult the bibliography recommended to complete the information. With the end to realise a *seguimento of the process of study and understanding of the matter, will realise periodic controls during some sessions *magistrales, that will be determined in advance
Seminars	They will devote to argue the most complicated appearances of the subjects treated, to use programs of *modelado molecular that will allow to work with diverse *biomoléculas *cocristalizadas with distinct *ligandos, and also to the presentation of works, investigations, summaries etc., realised by the students/ace and related with the content of the matter
Outdoor study / field practices	It will visit a company of the sector *farmaceútico in which it will be able to appreciate the process of production in all his phases. After the visit the students will have to answer, in schedule of class, to a questionnaire related with the same.

Personalized attention

Methodologies	Description
Seminars	Time devoted by the *profesorado to attend the needs and queries of the *alumnado related with the study of the matter and with the activities developed. The *profesorado will inform in the presentation of the matter on the available schedule.

Assessment

	Description	Qualification	Training and Learning Results		
Master Session	They will evaluate the contents developed in the *temario (subjects 1-6) by means of questions that will pose *verbalmente or by writing in the classroom. The questions that formulate by writing will be referents to the contents treated in the two or three previous weeks.	7	A1 A3	C19 C23	D14 D15 D16
Seminars	It will value the assistance and the participation in the classes, the resolution of exercises and questions, the presentation and exhibition of reports, of summaries and of works	23	A1 A3 A4 A5	C19 C20 C22 C23	D1 D3 D4 D5 D7 D8 D9 D10 D12 D13 D14 D16
Outdoor study / field practices	It will value the assistance and active participation in the visit, and the result obtained in the realisation of a questionnaire on the same.	10	A3	C20	D14 D15 D17
Short answer tests	*relizarán 2 short proofs, of 1 *h of length. The first in the week 6 and in her will go in the contended of the *temario explained until this moment. The second when finalising the subject 7 and in her will go in exclusively the contended of the subject 7.	30	A1 A3 A5	C19 C20	D7 D12 D13 D14
Long answer tests and development	Finalised the 6 first subjects will realise a global proof to evaluate the competitions purchased. It is indispensable requirement to surpass the matter reach a minimum of 50% in the proofs written.	30	A1 A3 A5	C19 C20	D7 D12 D13 D14

Other comments on the Evaluation

The participation of the *alumnado in any of the acts of *evluación of the matter will involve the condition of presented and therefore the allocation of a qualification. They consider acts of evaluation the assistance to seminars (4 or but), as well as the realisation any of the 3 proofs written. To be able to approve the matter the student has to have a note *mínina in some of the distinct sections in which *desglosa the evaluation. This minimum note has to be of 3,5 in the second proof of short answer, and of 4 in the proof of long answer,&*nbsp; in the assessment of the seminars and in the assessment of the exit of studies.Evaluation of the announcement of July1. Punctuation obtained by the students/ace during the course: maximum 4 pointswill conserve the punctuation *obtendida in&*nbsp; the questions *plantedas in the sessions *magistrales (maximum 0,7 points), in the activities related with the visit (maximum 1 point), and in participation in the seminars (maximum 2,3 points).2. Work realised by the students: maximum 2 points Finished the process of evaluation of June, the *profesorado will propose to the students/ace that have not surpassed the matter the realisation of an individual work that allow them purchase the competitions of which will be evaluated in July. This work will have to be delivered and defended by the students before the official examination of this announcement.&*nbsp; Tests writtenThe students/ace will realise a proof written similar to the one of June in which they will be able to obtain a maximum of 4 points

Sources of information

A. Delgado C. Minguillón y J. Juglar, **Introducción a la Química Terapéutica**, 2ª Edición 2003,

G. L. Patrick, **An introduction to Medicinal Chemistry**, 5th Edition 2013,

C. G. Wermuth, **4. The Practice of Medicinal Chemistry**, 3rd Edition 2008,

R. Renneberg, **Biotecnología para principiantes**, 2004,

Recommendations

Subjects that it is recommended to have taken before

Biology: Biology/V11G200V01101
IT tools and communication in chemistry/V11G200V01401
Physical chemistry I/V11G200V01303
Physical chemistry II/V11G200V01403
Organic chemistry I/V11G200V01304
Structural Determination/V11G200V01501
Chemical engineering/V11G200V01502
Analytical chemistry II/V11G200V01503
Biological chemistry/V11G200V01602
Organic chemistry II/V11G200V01504
Organic chemistry III/V11G200V01704