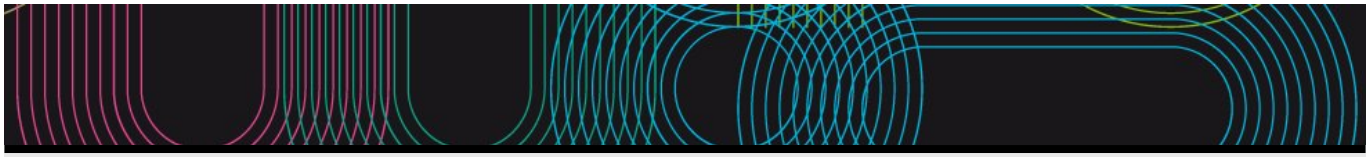

IDENTIFYING DATA				
Industrial organic chemistry				
Subject	Industrial organic chemistry			
Code	V12G350V01923			
Study programme	Degree in Industrial Chemical Engineering			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language				
Department				
Coordinator	Izquierdo Pazó, Milagros			
Lecturers	Izquierdo Pazó, Milagros			
E-mail	mizqdo@uvigo.es			
Web				
General description				

Competencies	
Code	
B3	CG3 Knowledge in basic and technological subjects that will enable students to learn new methods and theories, and provide them the versatility to adapt to new situations.
B4	CG4 Ability to solve problems with initiative, decision making, creativity, critical thinking and the ability to communicate and transmit knowledge and skills in the field of industrial engineering specializing in Industrial Chemistry.
C4	CE4 Ability to understand and apply the basic knowledge of general chemistry, organic chemistry and inorganic chemistry, and their applications in engineering.
D1	CT1 Analysis and synthesis.
D2	CT2 Problems resolution.
D3	CT3 Oral and written proficiency in the own language.
D9	CT9 Apply knowledge.
D10	CT10 Self learning and work.
D16	CT16 Critical thinking.
D17	CT17 Working as a team.

Learning outcomes			
Expected results from this subject	Training and Learning Results		
(*)	B3 B4	C4	D1 D2 D3 D9 D16
(*)	B3 B4	C4	D3 D9 D10 D16 D17
(*)	B3	C4	D2
(*)	B3	C4	D1 D9

Contents
Topic

1. The organic chemical industry.	1.1. Introduction and general characteristics. 1.2.Prime matters. 1.3. Petrochemical. 1.3. Intermediate products and final products.
2. Fundamental concepts of organic chemistry.	2.1. Link, hybridisation and geometry. 2.2. Hydrocarbons. *Aromaticidad. Resonant structures. 2.3. Functional groups. 2.4. Strengths *intermoleculares. 2.5. Formings and isomery.
3. Reactivity of the organic compounds.	3.1. Kinetical and mechanisms of reaction. 3.2. *Catálisis, *homogénea and heterogeneous. 3.3. Reactivity of the organic compounds. 3.3.1. Reactivity of the *sustrato. 3.3.2. Electronic structure of the reactive. 3.3.3. Intervals of reaction. 3.4. Types of organic reactions.
4. Etileno. Propileno. Intermediate products and finals. Polymerisation.	4.1. Reactions of addiction. 4.2. Industrial products from the etileno. 4.3. Industrial products from the propileno. 4.4. Polymeric materials. Classifications. 4.4.1.Reactions of polymerisation. Additions and condensations. 4.4.2. Polietileno And polipropileno.
5. Fraction C4. Dienos And polienos. Intermediate products and finals. Fibres and elastomers.	5.1. Butenos. 5.2. Dienos, types and characteristic. 5.3. Synthesis of Diels Alder. 5.4. Elastomers. 5.4.1. Rubbers of the isopreno. 5.4.2. Rubbers of isobutileno. 5.4.3. Rubbers of the 1,3-butadieno. 5.5. Fibres 5.5.1. Acrylic, polyamides and polyesters.
6. Fraction BTX. Aromatic.	6.1. Reactivity of the arenos. Benceno. 6.1.1. Replacements electrófilas aromatic. 6.1.2. Effect of the sustituyentes. Activantes And *desactivantes. 6.2. Polymers estirénicos. 6.3. Derived of the tolueno. Benzaldehído, phenols polifenoles and sour adípico. 6.3.1. Phenolic resins, epoxi and polycarbonates. 6.4. Isocianatos and poliuretanos. 6.5. Xilenos. Resins alcídica and polyesters. 6.4. Other compounds and aromatic products.
7. Other organic compounds of industrial interest.	7.1. Nitrogenous compounds. 7.1.1. Salts of diazonio. Colorantes And pigments. 7.2. Compound halogenados. Dissolvent and insecticide. 7.3. Compound oxigenados. Organic acids, alcohols and ketones of industrial interest. 7.4. Agents tensoactivos. Types and characteristic.

Planning

	Class hours	Hours outside the classroom	Total hours
Troubleshooting and / or exercises	10	30	40
Laboratory practises	18	12.6	30.6
Presentations / exhibitions	0	15	15
Master Session	16.3	41.9	58.2
Short answer tests	3	0	3
Troubleshooting and / or exercises	3	0	3
Jobs and projects	0.2	0	0.2

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description
Troubleshooting and / or exercises	Along the course will realise exercises in base to bulletins, some will be resolved in the classroom and others will have to be worked of autonomous form and in his case delivered for evaluation.
Laboratory practises	They will realise practices of laboratory that will include questions or exercises related with the work realised and that they will have to be delivered for his evaluation. This activity is compulsory to be able to surpass the asignatura.

Presentations / exhibitions	They will propose to the thematic students related with the contents of the asignatura, so that they realise an individual work on any of them.
Master Session	It will consist in the exhibition of the contents of the asignatura in base to the bibliography proposed and to the documentation facilitated in the platform FAITIC

Personalized attention

Methodologies	Description
Master Session	All the activities will be supported by the personalised attention to the alumnado in the hours of tutorías planned for the asignatura.
Troubleshooting and / or exercises	All the activities will be supported by the personalised attention to the alumnado in the hours of tutorías planned for the asignatura.
Laboratory practises	Todas las actividades serán apoyadas por la atención personalizada al alumnado en las horas de tutorías previstas para la asignatura.
Presentations / exhibitions	All the activities will be supported by the personalised attention to the alumnado in the hours of tutorías planned for the asignatura.

Assessment

	Description	Qualification	Training and Learning Results
Troubleshooting and / or exercises	Results of learning: purchase a generic knowledge of the organic products more important in the industry, his application in the field of the biotenología and the enzymatic chemistry; know the factors that influence in the chemical structure and the final properties of the polymers. In each one of the proofs written will pose problems and exercises that require the application to concrete cases of the knowledges purchased.	30	B3 C4 D1 B4 D2 D3 D9 D10 D16 D17
Laboratory practises	Results of learning: purchase a generic knowledge of the organic products more important in the industry, his application in the field of the biotenología and the enzymatic chemistry; know the factors that influence in the chemical structure and the final properties of the polymers. It will consider the attitude, the participation and the quality of the work realised in the laboratory, besides the student will answer to the questions posed in each one of the practices realised.	20	B3 C4 D1 B4 D3 D9 D16 D17
Presentations / exhibitions	Results of learning: purchase a generic knowledge of the organic products more important in the industry, his application in the field of the biotenología and the enzymatic chemistry; know the factors that influence in the chemical structure and the final properties of the polymers. It will evaluate the quality of the contents of the work delivered, together with the presentation realised and the answers to the questions realised.	20	B3 C4 D1 B4 D3 D10 D16
Master Session	Results of learning: purchase a generic knowledge of the organic products more important in the industry, his application in the field of the biotenología and the enzymatic chemistry; know the factors that influence in the chemical structure and the final properties of the polymers. In each one of the proofs written will include questions or questions of short answer for the evaluation of the competitions purchased in relation to the contents of the asignatura.	30	B3 C4 D1 B4 D3 D16

Other comments on the Evaluation

Partial proofs. During the course will realise two partial proofs written, that will include questions of short answer and of problems or exercises with a respective weight in the final qualification of the 10 and 20%.

Final examination 1ª announcement: it will include questions of short answer and problems or exercises with a respective weight in the final qualification of 30%.

1ª Edition of the record: The final qualification will be the sum of the obtained in all the proofs realised. Practices of laboratory, presentation of the work and examinations written, whenever this was equal or upper to 5,0. In another case will reflect the sum of the obtained in the practices of laboratory and in the presentation of the work realised.

2ª Edition of the record: The qualification will be the obtained when adding the reflected in the first edition of the record with the obtained in the corresponding examination to the extraordinary announcement.

Sources of information

Basic Bibliography

Primo Yúfera, E., **Química orgánica básica y aplicada. Tomo I y II.**, Reverté,

Philip S. Baley, **Química orgánica. Conceptos y aplicaciones**, Pearson,

Harold, A. Wittcoff, **Productos químicos orgáncios industriales. Vol 1. Materias primas y fabricación.**, Limusa,

Mª José Climent Olmedo, et al., **Química orgánica. Principales aplicaciones industriales.**, Univ. Politécnica de Valencia,

Harold A. Wittcoff, **Productos químicos orgánicos industriales. Vol 2. Tecnología, formulaciones y usos.**, Limusa,

Complementary Bibliography

Harold A. Wittcoff, **Industrial Organic Chemicals**, Wiley,

Green, Mark M., **Organic chemistry principles and industrial practice.**, Wiley -VCH,

McMurry, **Química orgánica.**, Cengage,

Issa Katime Amashta, et al., **Introducción a la ciencia de los materiales poliméricos. Síntesis y caracterización.**, Univ. País Vasco.,

Recommendations

Subjects that are recommended to be taken simultaneously

Reactors and biotechnology/V12G350V01601
Bioelectrochemistry/V12G350V01921

Subjects that it is recommended to have taken before

Chemistry: Chemistry/V12G350V01205
Experimentation in industrial chemistry 1/V12G350V01505
Experimentation in industrial chemistry 2/V12G350V01602
Chemical engineering 2/V12G350V01503
Industrial chemistry/V12G350V01504