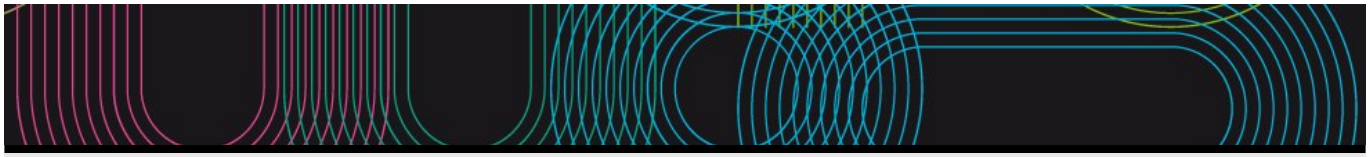

IDENTIFYING DATA				
Environmental management techniques				
Subject	Environmental management techniques			
Code	V12G350V01925			
Study programme	Grado en Ingeniería en Química Industrial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	2nd
Teaching language				
Department				
Coordinator	Domínguez Santiago, María de los Ángeles			
Lecturers	Domínguez Santiago, María de los Ángeles			
E-mail	admguez@uvigo.es			
Web				
General description	In this *asignatura tackle the main appearances of the management of waste, *tecnicas of treatment of the same and minimisation of waste			

Training and Learning Results	
Code	
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.
B7	CG7 Ability to analyze and assess the social and environmental impact of the technical solutions.
C16	CE16 Basic knowledge and application of environmental technologies and sustainability.
D2	CT2 Problems resolution.
D9	CT9 Apply knowledge.
D10	CT10 Self learning and work.
D17	CT17 Working as a team.

Expected results from this subject	Training and Learning Results		
Know the methods of minimisation and revalorization of waste.		C16	D10
Know the methods of treatment of toxic and dangerous waste.		C16	D9
Master the tools of environmental management in the Chemical Industry.	B4		D2 D9 D10
Know the environmental legislation that affects the industrial processes.	B7	C16	D2 D9 D10
Know apply the acquired knowledge to practical cases.	B4 B7	C16	D2 D9 D10 D17

Contents	
Topic	
Subject 1.- Waste	General concepts. Classification of the waste. Toxic and dangerous waste. Applicable legislation
Subject 2.- Treatment of waste	Definition. Legislation. Treatments of the waste. Centres of treatment
Subject 3.- Sustainability. Minimisation of industrial waste. Best available techniques.	Sustainability. Stages of a program of minimisation. Technicians of minimisation of the pollution. Application of the best available techniques to a process.

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	26	60	86
Mentored work	10	3.5	13.5
Presentation	2	4	6
Problem solving	10	10.5	20.5
Essay questions exam	2	10	12
Problem and/or exercise solving	2	10	12

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

Methodologies	
	Description
Lecturing	Theoretical class in which the professor will expose the most notable appearances of each subject, taking like base the available documentation in the platform Tema.
Mentored work	The students will make a work related with the best available technicians applicable to a process. The main points that the students have to develop and the bibliography recommended will be indicated.
Presentation	The students will make an oral presentation of the work made and will answer to the questions made by the professor and by the other students.
Problem solving	Some exercises will be solved in class and others will be solved by the students and delivered ion time

Personalized assistance	
Methodologies	**Description**
Problem solving	The students can solve any doubts during the assigned hours.
Mentored work	The work will be monitored along the course.

Assessment					
	Description	Qualification	Training and Learning Results		
Mentored work	The students will realise and will deliver the work assigned.	10	B7		D9 D10 D17
Presentation	The students will realise an oral presentation of an assigned work	10		C16	D9
Problem solving	The students will have to realise and deliver the exercises proposed.	15	B4 B7	C16	D2 D9
Essay questions exam	The students will realise an exam of all the subject	25	B7	C16	D9
Problem and/or exercise solving	It will make a proof of practical application on management of waste	40	B4	C16	D2 D9

Other comments on the Evaluation

It is precise to reach aminimum gradea of 3,5/10 in each one of the sections evaluables.

Second opportunity: the qualifications of the sectionsmentored work, presentation and problem solving will be maintained

The students that renounce to the continuous evaluation have to make an examination of all the matter in the date fixed by the EEI for these exams

Commitment ethic: it expects that the student present a behaviourethic suitable. In the case to detect a behaviour no ethic (copy, plagiarism, use of devices unauthorised, and others)it will be consedered that the student fails to meet the necessary requirements to pass the matter. In this case the qualification in the present course will be failing grade (0.0).

Sources of information

Basic Bibliography

J.J. Rodriguez y A. Irabien, **Los residuos peligrosos, caracterización, tratamiento y gestión**, Síntesis, 1999

W. Klopffer, B. Grahl, **Lyfe Cycle Assessment: a guide to best practice**, Wiley-VCH, 2014

Complementary Bibliography

D.T. Allen, D.R. Shonnard, **Green Engineering. Environmentally conscious design of chemical processes**, Prentice-Hall, 2002

Recommendations

Other comments