

IDENTIFYING DATA				
Environmental Engineering				
Subject	Environmental Engineering			
Code	P03G370V01609			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	3rd	2nd
Teaching language	Spanish Galician			
Department				
Coordinator	Ortiz Torres, Luis			
Lecturers	Ortiz Torres, Luis			
E-mail	lortiz@uvigo.es			
Web	http://www.webs.uvigo.es/lortiz			
General description	(*)metodos e sistemas de xestión medioambiental			

Skills
Code

Learning outcomes	
Expected results from this subject	Training and Learning Results

Contents	
Topic	
A. ATMOSPHERIC POLLUTION	A.1. ENVIRONMENTAL POLLUTANTS A.2. EFFECTS OF ATMOSPHERIC POLLUTION A.3.DESTRUCTION OF THE OZONE LAYER A.4.GLOBAL QUALITY A.4.1. Greenhouse gases A.4.2. The Kyoto Protocol TO 5. ACID RAIN A.6. OTHER CONTAMINANTS A.7.RIGHTS CORRUPTION OF POLLUTION A.8. ALTERNATIVE SOURCES OF ENERGY TO REDUCE ATMOSPHERIC EMISSIONS A.9. THE COGENERATION OF HEAT AND ELECTRICITY
B. RESIDUAL WATERS B.1. WATER	B.2. MANAGEMENT SYSTEMS: B.3. PHYSICO-CHEMICAL WATER PARAMETERS B.4. RESIDUAL WATER CONTAMINANTS B.5. RESIDUAL WATER PURIFICATION SYSTEMS B.5.2. Primary treatment B.5.2.1. Physical and Chemical Treatments B.5.3. Secondary treatment B.5.3.1. Biological Treatments B.5.4. Tertiary treatment B.5.5. Miscellaneous Treatments B.6. THE ANAEROBIA DIGESTION PROCESS B.7. FLOOR TREATMENT B.8. CASE STUDY

C. URBAN SOLID WASTE	C.1. LOS R.S.U. C.2. TREATMENT SYSTEMS C.2.2. CONTROLLED SHIFT C.2.2.1. Landfill with controlled use C.2.3. COMPOUND C.2.4. INCINERATION C.2.5. PYROLYSIS C.2.6. COMPARISON BETWEEN MANAGEMENT SYSTEMS
D. COMPOSITION	D.1. THE COMPOUND PROCESS D.1.1. PHYSICAL PARAMETERS D.1.2. COMPOUND SYSTEMS D.1.2.1. Indoor composting systems D.1.3. DEPURATION OF COMPOST D.1.4. COMPOST CHARACTERISTICS D.1.5. USING THE COPOST D.2. CROPS OF INTENSIVE TYPE
E. THE ANAEROBIA DIGESTION	E.1. THE ANAEROBIA DIGESTION E.2. PARAMETERS OF OPERATION AND CONTROL OF THE ANAEROBIC PROCESSES E.3. ANAEROBIA DIGESTION TECHNOLOGY E.3.1. Discontinuous digesters E.3.2. Continuous digesters E.3.2.1. Digesters with suspended biomass E.3.3. Two Phase Digester E.4. CONTROLLED VERTEDERO E.5. ANAEROBIA DIGESTION FACILITIES E.5.1. DESCRIPTION OF AN ANAEROBIA DIGESTION PLANT E.6. EXAMPLE OF INDUSTRIAL FACILITIES
F. THE RECYCLING	F.1. INTRODUCTION F.2. RECYCLED THEORY F.3. RECYCLING SYSTEMS F.4. PROBLEM OF THE RECYCLING PROCESS F.5. ADVANTAGES CONCERNING RECYCLING F.6. RECYCLING OF PAPER AND CARDBOARD F.6.1. PRODUCTION OF PASTE AND PAPER F.6.2. RECYCLING PAPER F.6.2.1. PREPARATION OF PAPER PASTE FROM PAPELOTE F.6.2.2.- DISFRANCED F.6.2.3.-DEPURATION F.6.3.4. UNLOCKED F.6.3.5. REFINE F.6.3.6. DIVISION F.6.3.7. IT'S HEAVY F.6.3.8. DISPERSION F.6.3.9. DESTINED
G. TOXIC AND DANGEROUS WASTE	G.1. IDENTIFICATION AND QUANTIFICATION OF RTP. G.2. PRODUCTION MANAGER RELATIONSHIP G.1.1. Obligations of the RPT Producer G.1.1.1. Authorization request G.2.1.2. Packaging and Labeling of Hazardous Wastes G.2.1.3. Storage of hazardous waste G.2.1.4. Annual statement G.2.2. OBLIGATIONS OF SMALL PRODUCERS OF HAZARDOUS WASTE

Planning

	Class hours	Hours outside the classroom	Total hours
Studies excursion	18	40	58
Case studies	7	5	12
Autonomous problem solving	9	20	29
Lecturing	17	33	50
Essay questions exam	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

	Description

Studies excursion	Practices Practice 1.- Waste water treatment plant (EDAR - Pontevedra) Practice 2.- MSW treatment plant (SOGAMA - Cerceda) Practice 3.- Cogeneration and treatment of effluents (ENCE) Practice 4.- Cogeneration and waste management (ECOWARM- Bastabales) The A91 competition will be developed in the field of industrial facilities visits.
Case studies	Individual or paired an individual chosen within the contents of the program for the elaboration of a situation or concrete case that will be presented publicly.
Autonomous problem solving	This is to present flow diagrams of the facilities visited during the course
Lecturing	These are theoretical classes in the classroom

Personalized assistance

Methodologies	Description
Studies excursion	These are views of industrial facilities
Case studies	It is a practical work and present it publicly

Assessment

	Description	Qualification	Training and Learning Results
Studies excursion	(*)Valórase a asistencia dos alumnos ás saídas prácticas	10	
Case studies	(*)O traballo é valorado e avaliado polos propios compañeiros tras a presentación do mesmo e polo profesor quen terá en consideración todos os factores sinalados no apartado de traballos tutelados	20	
Lecturing	(*)Valorarase a asistencia ás clases.	10	
Essay questions exam	(*)Avaliaranse os coñecementos adquiridos durante o desenvolvemento da materia.	60	

Other comments on the Evaluation

Sources of information

Basic Bibliography

Sánchez, Antoni, **De residuo a recurso**, 1, Mundi Prensa, 2014
Gil, Manuel, **Depuración de aguas residuales**, 1, CSIC, 2013
Seoanez, Mariano, **Manual de aguas residuales industriales**, 1, Mac Graw Hill, 2012
Picoraio, Simona, **Gestión de residuos Urbanos**, 1, CEYSA, 2016
Seoanez, Mariano, **Tratado de la contaminación atmosférica**, 1, Mundi Prensa, 2012

Complementary Bibliography

Recommendations

Other comments

Eligible subject for dual training projects as established by the memory of the degree.

Contingency plan

Description

=== EXCEPTIONAL PLANNING ===
Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes an extraordinary planning that will be activated when the administrations and the institution itself determine it, considering safety, health and responsibility criteria both in distance and blended learning. These already planned measures guarantee,

at the required time, the development of teaching in a more agile and effective way, as it is known in advance (or well in advance) by the students and teachers through the standardized tool.

=== ADAPTATION OF THE METHODOLOGIES ===
* Teaching methodologies maintained

* Teaching methodologies modified

* Non-attendance mechanisms for student attention (tutoring)

* Modifications (if applicable) of the contents

* Additional bibliography to facilitate self-learning

* Other modifications

=== ADAPTATION OF THE TESTS ===
* Tests already carried out
Test XX: [Previous Weight 00%] [Proposed Weight 00%]
...

* Pending tests that are maintained
Test XX: [Previous Weight 00%] [Proposed Weight 00%]
...

* Tests that are modified
[Previous test] => [New test]

* New tests

* Additional Information