



IDENTIFYING DATA

Environmental management

Subject	Environmental management			
Code	P03G370V01608			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	3rd	2nd
Teaching language				
Department				
Coordinator	Ortiz Torres, Luis			
Lecturers	Martínez Chamorro, Enrique José Ortiz Torres, Luis			
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General description	(*)metodos e sistemas de xestión medioambiental			

Competencies

Code	
B18	CG-18: Capacidade para aplicar as técnicas de auditoría.
B19	CG-19: Capacidade para aplicar as técnicas de xestión ambiental.
C38	(*)CE-38: Capacidade para coñecer, comprender e utilizar os principios de: xestión ambiental da industria forestal.
D1	(*)CBI 1: Capacidade de análise e síntese.
D2	(*)CBI 2: Capacidade de organización e planificación.
D11	(*)CBP 4: Habilidades de razoamento crítico.
D14	(*)CBS 2: Adaptación a novas situacións.
D15	(*)CBS 3: Creatividade.
D20	(*)CBS 8: Sensibilidade cara a temas ambientais.

Learning outcomes

Expected results from this subject	Training and Learning Results
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(*)CE-38.- Capacidad para conocer, comprender y utilizar los principios de: Gestión ambiental de la industria forestal.	B18 B19	C38	D1 D2 D11 D14 D15 D20
CE-38.1.- Conocer los principales problemas de la contaminación atmosférica.			
CE-38.2.- Conocer los principales elementos y actividades que producen la contaminación atmosférica.			
CE-38.3.- Conocer las principales tecnologías para el tratamiento de las emisiones por gases.			
CE-38.4.- Conocer las principales sustancias contaminantes de los efluentes líquidos.			
CE-38.5.- Conocer los principales sistemas de tratamiento y depuración de efluentes líquidos y de aguas residuales.			
CE-38.6.- Conocer los tipos de residuos sólidos y su composición.			
CE-38.7.- Conocer los principales tratamientos de residuos sólidos.			
CE-38.8.- Conocer las técnicas de compostaje para residuos forestales y materia orgánica.			
CE-38.9.- Conocer las principales tecnologías de digestión anaerobia para el tratamiento de residuos sólidos.			
CE-38.10.- Conocer las principales técnicas del reciclado sobre todo de materiales procedentes de industrias de papel y cartón.			
CE-38.11.- Conocer los principales sistemas de tratamiento de residuos tóxicos y peligrosos.			
CE-38.12.- Conocer y estudiar las nuevas fuentes de energías alternativas.			
CE-38.13.- Conocer los principios básicos de la cogeneración.			
CE-38.14.- Conocer la normativa medioambiental.			
CE-38.15.- Conocer los principios básicos de los estándares y de las auditorías medioambientales			
CE-38.16.- Conocer y saber aplicar las normas ISO de gestión medioambiental.			
CE-38.17.- Conocer los reglamentos EMAS de la normativa de gestión medioambiental y su aplicación.			
CE-38.18.- Realizar un estudio práctico de gestión medioambiental.			

New

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.- DISFRANDED 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
Outdoor study / field practices	20	40	60
Case studies / analysis of situations	10	0	10
Autonomous troubleshooting and / or exercises	9	20	29
Master Session	17	33	50
Long answer tests and development	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

Outdoor study / field practices	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 / analysis of situations	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 troubleshooting and / or exercises	This is to present flow diagrams of the facilities visited during the course
Master Session	These are theoretical classes in the classroom

Personalized attention

Methodologies	Description
Outdoor study / field practices	These are views of industrial facilities
Case studies / analysis of situations	It is a practical work and present it publicly

Assessment

	Description	Qualification	Training and Learning Results		
Outdoor study / field practices	(*)Valórase a asistencia dos alumnos ás saídas prácticas	10	B18 B19	C38	D1 D11 D14 D20
Case studies / analysis of situations	(*)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	B18 B19	C38	D1 D2 D11
Master Session	(*)Valorarase a asistencia ás clases.	10			
Long answer tests and development	(*)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