



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 razonamento crítico.

D14 (*)CBS 2: Adaptación a novas situacóns.

D15 (*)CBS 3: Creatividade.

D20 (*)CBS 8: Sensibilidade cara a temas ambientais.

Learning outcomes

Expected results from this subject

Training and Learning Results

(*)CE-38.- Capacidad para conocer, comprender y utilizar los principios de: Gestión ambiental de la industria forestal.	B18	C38	D1
CE-38.1.- Conocer los principales problemas de la contaminación atmosférica.	B19	D2	D11
CE-38.2.- Conocer los principales elementos y actividades que producen la contaminación atmosférica.		D14	D15
CE-38.3.- Conocer las principales tecnologías para el tratamiento de las emisiones por gases.		D20	
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 estandares 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 COPRODUCT D.2. CROPS OF INTENSIVE TYPE
E. THE ANAEROBIC DIGESTION	E.1. THE ANAEROBIC DIGESTION E.2. PARAMETERS OF OPERATION AND CONTROL OF THE ANAEROBIC PROCESSES E.3. ANAEROBIC 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. ANAEROBIC DIGESTION FACILITIES E.5.1. DESCRIPTION OF AN ANAEROBIC 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
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	C38	D1
			B19		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	C38	D1
			B19		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