



(*)Escola de Enxeñaría Forestal

Presentation

Welcome to the Forestry Faculty (Campus of Pontevedra - University of Vigo). Detailed information about our faculty can be found in <http://www.forestales.uvigo.es>

Our faculty offers the Degree in Forest Engineering

The Degree comprises 240 credits ECTS during four years, meaning an annual distribution of 60 ECTS distributed in 30 ECTS per semester.

Address

1. Name: Forestry Technical School
2. Degree: Degree in Forestry
3. Postal address: Campus A Xunqueira, 36005 Pontevedra
4. Telephone: 986-801900
5. FAX: 986-801907
6. And-mail: sdeutf@uvigo.es
7. Web: <http://www.forestales.uvigo.es>



Faculty Management

Managerial team:

Director: D. Enrique Valero Gutiérrez del Olmo

Deputy director: D^a. Angeles Cancela Carral

Secretary: D. Juan Picos Martín

Governing bodies:

- Faculty Assembly

- Commissions:

- Permanent
- Economic Affairs
- Academic Affairs
- Credit Validation
- Quality

Departments in the Centre:

Department of Engineering of the Natural Resources and Environment (<http://dir.uvigo.es>)

(*)Servizo e Infraestructuras do Centro

(*)

1. Administración: o horario de atención ao público de secretaría é de 9:00 a 14:00 horas.
2. Bibliotecas: http://www.uvigo.es/uvigo_gl/Administracion/Biblioteca/directorio/campus_pontevedra.html
3. Conserxaría: A conserxaría do Centro permanece aberta desde a apertura ao peche do Centro, en dúas quendas: 8:00 a 15:00 horas, e 15:00 a 22:00.
4. Reprografía: Este servizo atópase na Facultade de CC. Sociais e cobre as necesidades do Campus.
5. Cafetería
6. Administrador de Centros
7. Área de Servizos á Comunidade
8. Rexistro
9. LERD
10. Bolsas
11. CAP
12. OSIX

Aulas e laboratorios:

Aulas docentes:

AULA	Nº DE POSTOS TOTAIS	Nº DE POSTOS EN DISPOSICIÓN DE EXAME
1	65	35
2	65	35
3	65	35
4	98	53
5	104	56
6	104	56
7	104	56
8	104	56
9	104	56
SUMA	813	438

Laboratorios e talleres:

ANDAR	LABORATORIO	DOCENTE		INVEST.	
		Superficie	Capacidad Persoas	Superficie	Capac. Persoas
Soto	Lab. Hidráulica e Hidroloxía Forestal	115,83 m ²	16	35,67 m ²	3
Soto	Lab. Enxeñería Mecánica /Lab. Termotecnia	110,17 m ²	16	NO	No
Soto	Celulosa Pasta e Papel	72,04 m ²	15	35,67 m ²	3
Soto	Taller Enerxías Xiloxeneneradas	171,51 m ²	25	2º Andar	2º Andar
Soto	Taller de Madeiras	342,11 m ²	35	NO	NO
P.Baixa	Aula Informática (1)	108,85 m ²	24	NO	
P.Baixa	Aula Informática (2)	107,34 m ²	24	NO	
P.Baixa	Expresión Gráfica	168,45 m ²	48	NO	
P.Baixa	Proxectos	95,00 m ²		6	
1º	Lab. Física	112,54 m ²	16	35,67 m ²	4
1º	Lab. Ecoloxía	109,41 m ²	30	36,61 m ²	4
1º	Lab. Enxeñería do Medio Ambiente	NO	NO	34,54 m ²	4
1º	Lab. Topografía	117,57 m ²	40	36,75 m ²	2
1º	Lab. Edafoloxía	109,98 m ²	16	27,40 m ²	7
2º	Lab. Silvicultura e Repoboación	109,60 m ²	16		
2º	Lab. Enerxías Xiloxeneneradas	Soto	Soto	36,61 m ²	4
2º	Lab. Incendios Forestais	112,11 m ²	17	34,54 m ²	5
2º	Lab. Producción Vexetal	117,57 m ²	24	36,75 m ²	4

2º	Lab. de Acuicultura	112,54 m²	pendente	NO	NO
2º	Lab. Enxeñería Eléctrica	110,73 m²	21	NO	NO
2º	Lab. Enxeñería Química	109,98 m²	15	27,40 m²	6

Additional information

STUDENTS OFFICE:

Number tfno.: 986 801913

And-mail: daeuetf@uvigo.es



Main Regulations

Rules of interest for the students; we indicate the links where the student can find information of his interest:

Specific rules of the University of Vigo: www.uvigo.es

http://www.uvigo.es/uvigo_gl/administración/servicioalumnado

<http://extension.uvigo.es>

http://webs.uvigo.es/vicoap/normativa_oa.gl.htm

http://www.uvigo.es/uvigo_gl/estudiostitulaciones

http://www.uvigo.es/uvigo_gl/vidauniversitaria/calendarioescolar

http://www.uvigo.es/uvigo_gl/vidauniversitaria/universidadvirtual

http://secxeral.uvigo.es/secxeral_gl/normativa/normativauniversidad/estudaintes/regulamento_estudiantes.html

http://www.uvigo.es/uvigo_gl/vidauniversitaria/normativa

<http://www.forestales.uvigo.es>

Other Information

- **Study Plan:** <http://www.forestales.uvigo.es>
- **Scholarships:** <http://193.146.32.123:8080/GestorBecas/user/Becas.do?accion=tiposList>
- **Medical assistance:** http://www.uvigo.es/uvigo_gl/vidauniversitaria/salud/centromedico/
- **Employment Office :** <http://emprego.uvigo.es/>

• **Canteens and accommodation:** http://www.uvigo.es/uvigo_gl/vidauniversitaria/comedores_aloxamento/

• **Other activities:**

http://www.campuspontevedra.uvigo.es/index.php?*id=14 (Sports in the Campus of Pontevedra)

<http://deportes.uvigo.es/index.asp> (Sport Services).

<http://extension.uvigo.es/>

(*) Grao en Enxeñaría Forestal

Subjects

Year 1st

Code	Name	Quadmester	Total Cr.
P03G370V01101	Expresión gráfica: Expresión gráfica e cartografía	1st	9
P03G370V01102	Física: Física I	1st	6
P03G370V01103	Matemáticas: Matemáticas e informática	1st	9
P03G370V01104	Fundamentos de economía da empresa	1st	6
P03G370V01201	Biología: Biología vexetal	2nd	6
P03G370V01202	Física: Física II	2nd	6
P03G370V01203	Matemáticas: Ampliación de matemáticas	2nd	9
P03G370V01204	Química: Química	2nd	9

Year 2nd

Code	Name	Quadmester	Total Cr.
P03G370V01301	Matemáticas: Estatística	1st	6
P03G370V01302	Edafología	1st	6
P03G370V01303	Botánica	1st	6
P03G370V01304	Electrotecnia e electrificación rural	1st	6
P03G370V01305	Zoología e entomología forestal	1st	6
P03G370V01401	Selvicultura	2nd	6
P03G370V01402	Ecoloxía forestal	2nd	6
P03G370V01403	Topografía, teledetección e sistemas de información xeográfica	2nd	9
P03G370V01404	Hidráulica	2nd	9

Year 3rd

Code	Name	Quadmester	Total Cr.
P03G370V01501	Construcións forestais	1st	6
P03G370V01502	Maquinaria forestal	1st	6
P03G370V01503	Proxectos	1st	6
P03G370V01504	Impacto ambiental	1st	6
P03G370V01505	Lexislación e certificación forestal	1st	6
P03G370V01601	Aproveitamentos forestais	2nd	6
P03G370V01602	Dasometría	2nd	6
P03G370V01603	Repoboacións	2nd	6
P03G370V01604	Hidroloxía forestal	2nd	6
P03G370V01605	Ordenación de montes	2nd	6

P03G370V01606	Tecnoloxía da madeira	2nd	6
P03G370V01607	Xiloenerxética	2nd	6
P03G370V01608	Xestión ambiental	2nd	6

Year 4th

Code	Name	Quadmester	Total Cr.
P03G370V01701	Planificación física e ordenación territorial	1st	6
P03G370V01702	Xestión de caza e pesca	1st	6
P03G370V01703	Patoloxía e pragas forestais	1st	6
P03G370V01704	Silvopascicultura	1st	6
P03G370V01705	Tecnoloxía do secado e conservación de madeiras	1st	6
P03G370V01706	Industrias de primeira transformación da madeira	1st	6
P03G370V01707	Organización industrial e procesos na industria da madeira	1st	6
P03G370V01708	Innovación e desenvolvemento de produtos na industria da madeira	1st	6
P03G370V01801	Xestión de espazos protexidos e biodiversidade	2nd	6
P03G370V01802	Incendios forestais	2nd	6
P03G370V01803	Celulosa, pasta e papel	2nd	6
P03G370V01804	Control de calidade e prevención de riscos laborais na industria forestal	2nd	6
P03G370V01981	Prácticas externas: Prácticas en empresas	2nd	6
P03G370V01991	Traballo de Fin de Grao	2nd	12

IDENTIFYING DATA**Graphic expression: Graphic expression and cartography**

Subject	Graphic expression: Graphic expression and cartography			
Code	P03G370V01101			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	9	Basic education	1st	1st
Teaching language				
Department				
Coordinator	Armesto González, Julia			
Lecturers	Armesto González, Julia			
E-mail	julia@uvigo.es			
Web	http://http://cursos.faitic.uvigo.es/tema1415/claroline/course/index.php			
General description	(*)Esta materia ofrece unhas nocions fundamentais sobre os sistemas de representación aplicados ao ámbito da Enxeñaría Forestal, con especial atención ao sistema de planos acotados. Asimismo se abordan conceptos fundamentais de cartografía e xeodesia que permitirán ler e interpretar mapas correctamente. Ademais, se amosa a utilización de ferramentas de software que permiten ao alumno xerar os seus propios planos e documentos de expresión gráfica a escala considerando estándares recollidos en normas ISO.			

Competencies

Code		Typology
CG5	CG-05: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Dos sistemas de representación.	- know - Know How
CG29	CG-29: Coñecementos das seguintes materias necesarios tanto para a xestión dos sistemas forestais como para a súa conservación: camiños forestais.	- know
CE1	(*)CE-01: Coñecemento das técnicas de representación. Capacidade de visión espacial. Normalización. Debuxo topográfico. Programas informáticos de interese en enxeñaría: deseño asistido por ordenador.	- know - Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- know - Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How

Learning outcomes

Learning outcomes	Competences
(*)*CE-01.1: Comprise and know apply different appearances related with the Technical Drawing.	CG5 CG29 CE1
New	CE1
New	CT6 CT11
New	CT6
New	CT13
New	CE1
New	CT6
New	CG5 CG29 CE1
New	CT11
New	CT13

Contents

Topic

1.- Normalisation	Organisms of normalisation Formats, lines and writings normalised. Folded of planes. Scales. Normalisation in the representation: Representation of seen; section, court, break. Acotation.
2.-System of representation diedric system	Descriptive geometry and systems of representation. diedric System: generalities, the point, the straight and the plane
3.- System of bounded planes	System of bounded planes: generalities, the point, the straight and the plane. Intersections. Parallelism and perpendicularity. Abatements and distances. Representation and resolution of covers.
4.- Topographical drawing	Representation of the terrain. Forms of the terrain. Equidistances and curves of level. Points and singular lines of the terrain. Traced of longitudinal and transversal profiles. Explanations.
5.- Computer-aided design	Drawing of simple entities. Utilities and help to the drawing. Edition and modification of simple entities. Blocks and external references. Presentation of planes. Preparation of Digital Models of Terrain

Planning

	Class hours	Hours outside the classroom	Total hours
Troubleshooting and / or exercises	16	8	24
Laboratory practises	20	36	56
Tutored works	5	15	20
Master Session	24	36	60
Practical tests, real task execution and / or simulated.	5	15	20
Troubleshooting and / or exercises	5	10	15
Jobs and projects	2	20	22
Systematic observation	8	0	8

*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	(*) Actividade na que se formulan problemas e/ou exercicios relacionados coa materia. O alumno debe desenvolver as solucións adecuadas ou correctas mediante a exercitación de rutinas, a aplicación de fórmulas e procedementos de transformación da información dispoñible e a interpretación dos resultados. Sirve de complemento da lección maxistral. Desenvólvese en aula con dotacions específicas. Se desenvolven as competencias CE-01.1, CE-01.2, CE-01.3, CE-01.5, CG-29. A docencia poderá impartirse total ou parcialmente en inglés en caso de demanda por parte dos alumnos ou do centro.
Laboratory practises	(*) Actividades de aplicación dos coñecementos a situacións concretas e de adquisición de habilidades básicas e procedimentais relacionadas coa expresión gráfica e o dibuxo topográfico mediante software específico. Desenvólvense en aula de informática. Se desenvolven as competencias CE-01.3, CE-01.5. A docencia poderá impartirse total ou parcialmente en inglés en caso de demanda por parte dos alumnos ou do centro.

Tutored works	(*) O estudante, de maneira individual ou en grupo, elabora un documento sobre a temática da materia. Inclúe a procura e recollida de información, lectura e manexo de bibliografía, redacción, etc. Se desenvolven as competencias CT-6, CT-11, CT-13.
Master Session	(*) Exposición por parte do profesor dos contidos sobre a materia obxecto de estudo, bases teóricas e/ou directrices de traballos, exercicios ou proxectos a desenvolver polo estudante. Se desenvolven as competencias CE-01.1, CE-01.2, CE-01.3, CE-01.4, CE-01.5, CG -29.

Personalized attention

Methodologies	Description
Master Session	
Troubleshooting and / or exercises	
Laboratory practises	
Tutored works	

Assessment

	Description	Qualification	Evaluated Competences
Practical tests, real task execution and / or simulated.	(*) Probas para a avaliación que inclúen actividades, problemas ou exercicios prácticos a resolver. Os alumnos deben dar resposta á actividade formulada, aplicando os coñecementos teóricos e prácticos da materia.	35	CG5 CG29 CE1 CT6
Troubleshooting and / or exercises	(*) Proba na que o alumno debe solucionar unha serie de problemas e/ou exercicios nun tempo/condicións establecido/as polo profesor. Desta maneira, o alumno debe aplicar os coñecementos que adquiriu.	35	CG5 CG29 CT6 CT11
Jobs and projects	(*) O estudante presenta o resultado obtido na elaboración dun documento sobre a temática da materia, na preparación de seminarios, investigacións, memorias, ensaios, resumos de lecturas, conferencias, etc. Pódese levar a cabo de maneira individual ou en grupo, de forma oral e escrita.	20	CT6 CT11 CT13
Systematic observation	(*) Técnicas destinadas a recompilar datos sobre a participación do alumno, baseados nun listado de condutas ou criterios operativos que faciliten a obtención de datos cuantificables.	10	CG5 CG29 CT6 CT11 CT13

Other comments and July evaluation

Sources of information

Basic Bibliography

Rodríguez de Abajo, F.J.; Álvarez Bengoa, V., Curso de dibujo geométrico y de croquización, Editorial Donostiarra, 2005, San Sebastián (España)

Polidura Fernández, F. J., Topografía, geodesia y cartografía aplicadas a la ingeniería, Ed. Mundi-Prensa, 2000, Madrid (España)

Vázquez, F.; Martín, J., Lectura de mapas, Ediciones del IGN, 1995, Madrid (España)

Complementary Bibliography

Recommendations

IDENTIFYING DATA**Physics: Physics I**

Subject	Physics: Physics I			
Code	P03G370V01102			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Basic education	1st	1st
Teaching language				
Department				
Coordinator	González Fernández, Pio Manuel			
Lecturers	González Fernández, Pio Manuel			
E-mail	pglez@uvigo.es			
Web				
General description	<p>Didactic aims</p> <p>Dominate the concepts and physical laws of the mechanics, fields and waves.</p> <p>Differentiate the physical appearances *involucrados in the resolution of a problem of engineering.</p> <p>Analyse, interpret and explain daily physical situations.</p> <p>Resolve problems of mechanics, fields and waves applied the engineering.</p> <p>Dominate experimental technicians and the handle of instrumentation for the measure of physical magnitudes.</p> <p>Design and schedule an experimental setting in team related with appearances of the physics applied.</p> <p>Dominate the acquisition of experimental data and his statistical treatment</p> <p>Dominate technicians of graphic representation and calculation of parameters of adjust.</p> <p>Present a report or technical memory (oral and writing) with utilisation of the new technologies.</p>			

Competencies

Code		Typology
CG2	CG-02: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Físicos.	- know - Know How
CE2	(*)CE-02: Comprensión e dominio dos conceptos básicos sobre as leis xerais da mecánica, campos e ondas e a súa aplicación para a resolución dos problemas propios da enxeñaría.	- know - Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How

Learning outcomes

Learning outcomes	Competences
Lana relation between competitions *and results, *and he weight of each competition inside wool matter show * in him *pdf *attach. http://forestales.uvigo.es/sites/default/files/02%20**Fisica%20*I.*Pdf#**overlay.**context=are/**content/competitions-*and-resulted-of-*learning-by-matter	CG2 CE2 CT6

Contents

Topic	
1. KINEMATICS	1.1.KINEMATICS OF THE MATERIAL POINT 1.2.KINEMATICS OF THE RIGID SYSTEMS
2. DYNAMICS	2.1. DYNAMIC OF THE POINT AND THE SYSTEMS 2.2. MOMENTS OF INERTIA 2.3. DYNAMIC OF THE BEEN USED TO RIGID
3. STATIC	3.1. LAWS OF STATIC
4. MECHANICAL SYSTEMS	4.1. FRICTION BETWEEN USED TO 4.2. YOU SCHEME SIMPLE 4.3. ELASTICITY
5. MECHANICAL SWINGS	5.1. FREE SWINGS 5.2. SWINGS CUISHIONED AND FORCED
6. MECHANICS OF FLUIDS	6.1. HYDROSTATIC 6.2. HYDRODINAMICS

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	20	30	50
Troubleshooting and / or exercises	15	22.5	37.5
Laboratory practises	17	25.5	42.5
Reports / memories of practice	1	15	16
Short answer tests	1.5	0	1.5
Troubleshooting and / or exercises	2.5	0	2.5

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

Methodologies

	Description
Master Session	Exhibition by part of the professor of the contents of the matter, foundations and theoretical bases and guidelines of the exercises to develop by the student.
Troubleshooting and / or exercises	The professor gives the general guidelines for the resolution of problems or exercises related with the matter. The student has to develop the suitable or correct solutions by means of the application of formulas and the application of procedures.
Laboratory practises	Activities realised in the laboratory of application of the knowledges to concrete situations and of acquisition of basic skills and *procedimentales related with the matter. The *alumnado adopts an active role, developing diverse actions (realisation of an experiment, setting, manipulation of scientific instrumentation and taking of experimental data) to build his knowledge (graphic representation and deduction of the physical law that governs the experiment).

Personalized attention

Methodologies	Description
Master Session	
Laboratory practises	
Troubleshooting and / or exercises	

Assessment

	Description	Qualification	Evaluated Competences
Reports / memories of practice	Formative evaluation, realised of a continuous way, carried out fundamentally in the classes of laboratory that allows a continuous follow-up and a *realimentación constructive. It will value the presence and active participation in classes and in works *grupales, by means of checklists and by direct observation, and the quality of the works and individual reports and of group.	20	CG2 CE2 CT6
Short answer tests	They will evaluate the theoretical and practical knowledges of the matter using like objective instrument the answer written of several questions of theoretical application-practical.	35	CG2 CE2 CT6
Troubleshooting and / or exercises	They will evaluate the theoretical and practical knowledges of the matter (35%) and the purchased in the classes of laboratory (10%) using like objective instrument the resolution written of problems and/or exercises.	45	CG2 CE2 CT6

Other comments and July evaluation

In each methodology (Memories of practices, Proof of short answer and Resolution of problems) requires show a basic and minimum competition, that establishes in Apt=30. Numerical final qualification on scale of 10 points, according to the valid legislation.

Sources of information

Basic Bibliography

Complementary Bibliography

Tipler P.A, Física, Barcelona, 1992, Ed. Reverté

González P., Lusquiños F, Fundamentos Físicos para Forestais, Vigo, 2010, Servizo de Publicacións da Universidade de Vigo

Sears F.W., Zemansky M.W., Young H.D., Freedman R.A, Física, México, 1999, Addison Wesley

Gettys W.E., Keller F.J., Skove M.J, Física clásica y moderna, Madrid, 1992, McGraw-Hill

González P., Lusquiños F, Física en imaxes, Vigo, 2007, Servizo de Publicacións da Universidade de Vigo

Recommendations

Subjects that continue the syllabus

Physics: Physics II/P03G370V01202

Subjects that are recommended to be taken simultaneously

Mathematics: Mathematics and IT/P03G370V01103

IDENTIFYING DATA**Mathematics: Mathematics and IT**

Subject	Mathematics: Mathematics and IT			
Code	P03G370V01103			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	9	Basic education	1st	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Casas Mirás, José Manuel			
Lecturers	Casas Mirás, José Manuel			
E-mail	jmcasas@uvigo.es			
Web	http://http://faitic.uvigo.es/			
General description	The *assignatura is programmed so that the student purchase the necessary competitions to resolve problems of *índole mathematical that can present in the Forest Engineering, so that it purchase skill in the handle of programs of calculation, basic knowledges of Computing and management of the information, as well as in the handle of TIC.			

Competencies

Code		Typology
CG4	CG-04: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Matemáticos.	- know - Know How
CE3	(*)CE-03: Capacidade para a resolución dos problemas matemáticos que poidan presentarse na enxeñaría. Aptitude para aplicar os coñecementos sobre: álgebra lineal; xeometría; cálculo diferencial e integral. Coñecementos básicos sobre ordenadores, sistemas operativos, bases de datos, programación e programas de cálculo de uso en enxeñaría.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- know - Know How
CT3	(*)CBI 3: Capacidade de comunicación oral e escrita tanto na lingua vernácula como en linguas estranxeiras.	- know - Know How
CT4	(*)CBI 4: Coñecementos básicos de informática.	- know
CT5	(*)CBI 5: Capacidade de xestión da información.	- Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT9	(*)CBP 2: Habilidades nas relacións interpersoais.	- Know be
CT10	(*)CBP 3: Recoñecer a diversidade e a multiculturalidade.	- Know be
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- Know be
CT12	(*)CBP 5: Desenvolver un compromiso ético, que implique o respecto dos dereitos fundamentais e de igualdade entre homes e mulleres, e dos principios de igualdade de oportunidades, accesibilidade universal a persoas con discapacidade e educación para a paz.	- Know be
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How
CT14	(*)CBS 2: Adaptación a novas situacións.	- Know be
CT15	(*)CBS 3: Creatividade.	- Know be
CT16	(*)CBS 4: Liderado.	- Know be
CT18	(*)CBS 6: Iniciativa e espírito emprendedor.	- Know be
CT19	(*)CBS 7: Motivación pola calidade.	- Know be

Learning outcomes

Learning outcomes	Competences
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Capacity for the resolution of the mathematical problems that can arise in the engineering. Capacity to apply knowledges of: linear algebra; geometry; differential calculation and integral; basic knowledges on computers, operating systems, databases, programming and programs of calculation of use in the engineering. CG4
 CE3
 CT1
 CT2
 CT3
 CT4
 CT5
 CT6
 CT7
 CT9
 CT10
 CT11
 CT12
 CT13
 CT14
 CT15
 CT16
 CT18
 CT19

The relation between competitions and results, and the weight of each competition inside the *asignatura show in the pdf attach.
http://forestales.uvigo.es/sites/default/files/03%20*Matemat%20%20and%20*inf.Pdf#*overlay-*context=is/*content/competitions-and-resulted-of-learning-by-matter

Contents	
Topic	
Subject 1. The body of complex numbers	The body of complex numbers. Representation of complex numbers. Module and argument. Euler's Formula. Operations with complex numbers in polar form: powers (De Moivre's formula), roots, exponentials, logarithms.
Subject 2. Vectorial spaces	The vectorial space R^n . Vectorial Subspaces . Linear combination. Dependency and linear independence. Vectorial spaces of finite dimension. Base and dimension. Rank.
Subject 3. Linear applications	Linear applications. Properties. Core and image of a linear application. Characterisation of the linear applications injectives and surjectives. Rank of a linear application. Matrix associated to a linear application.
Subject 4. Matrices	Definition and types of matrices. Vectorial space of the matrices $m \times n$. Product of matrices. Regular matrix. Rank of a matrix. Calculation of the rank of a matrix and of the reverse matrix by means of elementary operations.
Subject 5. Determinants	Determinants Of a square matrix of order 2 and of order 3. Properties. Development by attachments. Calculation of the reverse matrix. Calculation of the rank of a matrix.
Subject 6. Systems of linear equations	Systems of linear equations: matrix form. Equivalent systems. Existence of solutions: theorem of Rouché-Frobenius. Homogeneous systems. Resolution of systems of linear equations: resolution by means of the methods of elimination of Gauss and Gauss-Jordan. Resolution of a system of Cramer. Resolution of a general system using the rule of Cramer.
Subject 7. Euclidean vectorial space	Scalar product. Norma. Distance. Orthogonality. Scalar product regarding a base. Orthogonal and orthonormal systems. Vectorial product. Mixed product. Areas and volumes.
Subject 8. Geometry	Three-dimensional affine space. The straight in the affine space. Equations of the straight. The plane in the affine space. Equations of the plane. Relations of incidence between straight and planes. Angles: of two straight, of two planes and of straight and plane. Distances: of a point to a plane, of a straight to a plane and of two straight that cross . Metric study of the conical.
Subject 9. Diagonalization Of endomorphisms and matrices	Vectors and own values. Subspaces Own. Characteristic polynomial. Diagonalization: Conditions. Polynomial nullifier. Theorem of Cayley-Hamilton. Applications.
Subject 10. Convergence in R .	Topology of the straight real: points distinguished, compact groups. Convergent successions in R . Operations with limits. Calculation of limits: indeterminations, rules of Stolz, of the arithmetical and geometrical averages and of the root. Numerical series. Geometrical and telescopic series. Series of positive terms. Criteria of convergence. Series alternated. Criterion of Abel. Absolute convergence. Sumation Of some elementary series.
Subject 11. Limit and continuity of functions of a real variable	Limit of a function in a point. Sequential limit. Properties of the limits. Calculation of limits. Continuity of real functions. Discontinuity: Types. Operations with continuous functions. Relative theorems to the global continuity: continuous image of a compact, theorem of Bolzano-Weierstrass, theorem of Bolzano: consequences. Continuity of the reverse function and of the compound function.

Subject 12. Differential calculation of a variable	Derived from a function in a point. Geometric interpretation of the concept of derivative. The differential. Derived function. Successive derivatives. Relationship between continuity and derivability. Calculation of derivatives: derived from the compound function and the inverse function. Theorems relating to derivable functions: Rolle's theorem, consequences; The mean value theorem, consequences; The rule of L'Hôpital, calculation of indeterminate limits. Taylor polynomials of a function. Taylor's theorem. Problems of highs and lows. Study of concavity and convexity. Turning points. Graphical representation of functions
Subject 13. Integration of functions of a variable	The Riemann integral: partitions, upper and lower sums, upper and lower integral, integral functions, the integral as sum limit. Properties. Theorem of the mean value. The fundamental theorem of integral calculus. Barrow Rule. Primitives. General methods of calculating primitives. Integrals improper. Geometric applications of the integral.
Subject 14. Informatics	Operating systems: classification, components, examples. Programming Fundamentals. Organization of archives. Methods of sorting and searching. Concept and types of databases.
LABORATORY PRACTICE AGENDA	
Practice 1. Introduction to the syntax of a symbolic calculation program.	Basic commands of a symbolic calculation program
Practice 2. Complex Numbers	Complex arithmetic in binomial form. Polar shape. Arithmetic in polar form
Practice 3. Vector Spaces	Operations with vectors. Linear independence of vectors and calculation of bases. Generator systems. Range of a vector system.
Practice 4. Linear Applications	Calculation of the associated matrix. Calculation of the kernel, image and rank
Practice 5. Matrices and determinants	Operations with matrices. Calculation of the determinant of a square matrix. Calculate the range of a matrix and the inverse matrix
Practice 6. Systems of linear equations	Resolution of linear systems. Cramer's Rule and Gauss and Gauss-Jordan Elimination Methods. Applications.
Practice 7. Euclidean Vector Space and Geometry	Calculation of the scalar product, vectorial and mixed. Calculation of areas, volumes, angles and distances. Conical curves
Practice 8. Diagonalization	Calculation of the eigenvalues and eigenvectors of a square matrix. Diagonalization of matrices. Applications
Practice 9. Convergence and Series	Inheritance limit. Application of the convergence criteria of series. Sum of series.
Practice 10. Functions	Calculating the limit of a function at a point. Graphical representation of functions. Study of continuity.
Practice 11. Derivation.	Derivation of functions. Calculation of tangent and normal lines. Problems of relative extremes. Developments in Taylor series. Local study of functions.
Practice 12. Integration	Calculation of primitives. Applications: calculation of areas, volumes, arc lengths, moments of inertia, etc
Subject 13. Informatics	Programming Fundamentals. Development and management of databases

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	0	1
Master Session	23	34.5	57.5
Troubleshooting and / or exercises	24	36	60
Laboratory practises	28	14	42
Autonomous practices through ICT	0	10	10
Autonomous troubleshooting and / or exercises	0	14	14
Classroom work	0	14	14
Long answer tests and development	4	0	4
Multiple choice tests	7	0	7
Troubleshooting and / or exercises	0	8	8
Jobs and projects	0	7.5	7.5

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

Methodologies

	Description
Introductory activities	(*) Actividades encamiñadas a tomar contacto, reunir información sobre o alumnado e a presenta-la materia.
Master Session	(*) Exposición de contidos da materia. Empregarase a exposición en pizarra con apoio de sistemas audiovisuais.
	Competencias relacionadas: A1, A5, A56, B9, B10, B11, B12.
Troubleshooting and / or exercises	(*) Formulación, análise, resolución e debate de problemas ou exercicios relacionados coa temática da materia. Empregarase a exposición en pizara con apoio de medios audiovisuais e programas de cálculo.
	Competencias relacionadas: A1, A5, A56, B1, B2, B3, B4, B5, B6, B7, B9, B10, B11, B12.
Laboratory practises	(*) Resolución de problemas relacionados cos contidos teóricos mediante o emprego dun programa de cálculo simbólico, un xestor de base de datos e un programa de edición de textos.
	Competencias relacionadas: A1, A5, A56, B1, B2, B3, B4, B5, B6, B7, B9, B10, B11, B12, B14, B15, B16, B18, B19.
Autonomous practices through ICT	(*) Utilizaránse recursos disponibles en liña, como bases de datos, e empregaráse a plataforma institucional TEMA para o desenvolvemento e realización de diversas tarefas.
	Competencias relacionadas: A56, B1, B2, B3, B4, B5, B13, B14.
Autonomous troubleshooting and / or exercises	(*) Formulación, análise, resolución e debate de problemas ou exercicios relacionados coa temática da materia, por parte do alumnado. Proporcionaránse boletíns de problemas correspondentes aos temas programados, que o alumno debe resolver por si mesmo.
	Competencias relacionadas: A1, A5, A56, B1, B2, B4, B5, B6, B7, B9, B11, B13, B14, B15.
Classroom work	(*) Realización de tarefas autónomas relacionadas cos temas programados, que serán entregadas empregando a plataforma TEMA para seren avaliadas.
	Competencias relacionadas: A1, A5, A56, B1, B2, B4, B5, B6, B7, B9, B11, B13, B14, B15, B16, B18, B19.

Personalized attention

Methodologies	Description
Troubleshooting and / or exercises	
Laboratory practises	
Classroom work	
Autonomous practices through ICT	
Autonomous troubleshooting and / or exercises	
Tests	Description
Multiple choice tests	
Troubleshooting and / or exercises	
Jobs and projects	

Assessment

Description	Qualification Evaluated	Competences
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Long answer tests and development	(*)Ten dúas partes: 1. Exame final de contidos teóricos. 2. Exame final de prácticas de laboratorio. Competencias avaliadas: A1, A5, A56, B1, B2, B3, B4, B5, B6, B7, B10, B12, B19	70	CG4 CE3 CT1 CT2 CT3 CT4 CT5 CT6 CT7 CT10 CT12 CT19
Multiple choice tests	(*)Resolución de probas pechadas consistentes en exercicios con varias respostas alternativas das que o alumno deberá sinalar a verdadeira. Resolución de problemas nas que, utilizando un sistema de cálculo simbólico, deberán proporcionar a resposta do programa ao exercicio correspondente. Competencias avaliadas: A1, A5, A56, B1, B3, B4, B6, B7, B10, B12, B13, B19	10	CG4 CE3 CT1 CT3 CT4 CT6 CT7 CT10 CT12 CT13 CT19
Troubleshooting and / or exercises	(*)Resolución de boletíns de problemas e prácticas de laboratorio. Competencias avaliadas: A1, A5, A56, B1, B2, B3, B4, B6, B7, B9, B10, B12, B13, B14, B15, B16, B18	10	CG4 CE3 CT1 CT2 CT3 CT4 CT6 CT7 CT9 CT10 CT12 CT13 CT14 CT15 CT16 CT18

Jobs and projects	(*)Realización de proxectos abertos nos que é preciso empregar diferentes coñcementos adquiridos ao longo do curso. Competencias avaliadas: A1, A5, A56, B1, B2, B3, B4, B5, B6, B7, B9, B11, B12, B13, B14, B15, B16, B18, B19	10	CG4 CE3 CT1 CT2 CT3 CT4 CT5 CT6 CT7 CT9 CT11 CT12 CT13 CT14 CT15 CT16 CT18 CT19
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Other comments and July evaluation

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Recommendations

Subjects that continue the syllabus

Mathematics: Overview of mathematics/P03G370V01203

Subjects that are recommended to be taken simultaneously

Physics: Physics I/P03G370V01102

IDENTIFYING DATA**Basics of business economics**

Subject	Basics of business economics			
Code	P03G370V01104			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	1st	1st
Teaching language	Spanish Galician			
Department				
Coordinator	García-Pintos Escuder, Adela			
Lecturers	García-Pintos Escuder, Adela			
E-mail	adelape@uvigo.es			
Web				
General description	The main aim of this matter is that the students comprise, with a practical and participatory approach, the components and operation of the company. Also it pretends interrelate it with other matters and provide the knowledges, attitudes and necessary skills to develop with efficiency and efficiency, his future professional activity in the world of the companies, and the organisations in general, especially in the forest industry.			

Competencies

Code		Typology
CG34	CG-34: Capacidade de organización e planificación de empresas e outras institucións, con coñecemento das disposicións lexislativas que lles afectan e dos fundamentos do marketing e comercialización de produtos forestais.	- know - Know How
CE4	(*)CE-04: Coñecemento adecuado do concepto de empresa e do marco institucional e xurídico da empresa. Organización e xestión de empresas.	- know
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- know - Know How
CT3	(*)CBI 3: Capacidade de comunicación oral e escrita tanto na lingua vernácula como en linguas estranxeiras.	- know - Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How

Learning outcomes

Learning outcomes	Competences
*CE-04: suitable Knowledge of the concept of company and of the institutional and juridical frame of the company. Organisation and management of companies.	CG34 CE4 CT1 CT2 CT3 CT6 CT7 CT11 CT13

Contents

Topic	
1.- THE COMPANY LIKE A COMPLEX SYSTEM	1.1. The system company: components. 1.2. Aims and functions of each component
2.- THE SURROUNDINGS OF THE COMPANY.	2.1. The general surroundings 2.2. The specific surroundings

3.- DIAGNOSTIC And BUSINESS STRATEGY.	3.1 The direction of companies 3.2. The diagnostic of the company: global, functional and DAFO 3.3. The design of strategies
4.- THE HUMAN FACTOR IN THE COMPANY.	4.1.- Business culture 4.2.- The leadership 4.3.- The power in the organisations 4.4.- Direction and management of human resources
5.- ORGANISATIONAL STRUCTURE IN THE COMPANY	5.1.- Concept of organisational structure 5.2.- Parameters of design of the structure 5.3.- The organisation chart 5.4.- Typology of structural groupings 5.5.- New structural forms
6.- INTRODUCTION To THE FUNCTION OF MARKETING And COMMERCIALISATION	6.1.- The system of marketing: basic concepts and decisions of marketing. 6.2.- Investigation of markets 6.3.- Segmentation of markets and positioning of the product. 6.4.- Decisions of marketing
7.- ECONOMIC APPEARANCES-FINANCIAL OF THE COMPANY	7.1.- The investment concepts and types 7.2.- The finance: concepts and types 7.3.- The countable reflection of the economic facts: the balance and the account of losses and gains 7.4.- Economic indicators-financial: the tree of profitability and the deadlock
8.- INTRODUCTION To THE FUNCTION OF PRODUCTION And LOGISTICAL	8.1.- Basic concepts of the system of production and logistical. 8.2.- Objective of the function of production 8.3.- Types of productive systems 8.4.- Planning of the production

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	0	1
Master Session	31	62	93
Classroom work	15	22.5	37.5
Short answer tests	2	8	10
Practical tests, real task execution and / or simulated.	1	7.5	8.5

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

Methodologies

	Description
Introductory activities	Activities directed to take contact and gather information about the students, as well as to present the subject.
Master Session	Exhibition of the contents as well as the theoretical bases.
Classroom work	The student will develop exercises or studies of cases in the classroom under the guidelines and supervision of the professor. Also it includes those activities that students will have to carry out previously of autonomous form and his resolution will be debated in the classroom.

Personalized attention

Methodologies	Description
Master Session	The schedule of student attention will be indicated at the beginning of the course
Classroom work	The schedule of student attention will be indicated at the beginning of the course
Tests	Description
Practical tests, real task execution and / or simulated.	The schedule of student attention will be indicated at the beginning of the course

Assessment

Description	Qualification Evaluated Competences

Short answer tests	It is a proof to final of course oriented to the application of the concepts developed	80	CG34 CE4 CT1 CT3 CT11
Practical tests, real task execution and / or simulated.	Proofs for the evaluation that include activities, problems or practical exercises to resolve. The students have to answer to the activity posed, applying the theoretical and practical knowledges . For this will use the Tics. It will not admit any exercise delivered out of term neither envoy in another half that was not through the platform FAITIC.	20	CG34 CE4 CT1 CT2 CT3 CT6 CT7 CT11 CT13

Other comments and July evaluation

This matter gives in FACE-TO-FACE diet by what the students have to assist to the theoretical and practical sessions in the schedule established by the centre. This supposes that the only system of evaluation is the contemplated in this guide. The system of evaluation of the matter supports in three elements:

a) Pass the practical part, with the realisation of the activities programmed. (2 points). b) Pass the theoretical part, by means of an examination written that it will realise in the distinguished date by the centre. (8 pointsc) The assistance and participation of studentsin the theoretical and practical classes.&*l

It is indispensable requirement to add the practical part at least have taken out a 4 on 10 points in the theoretical examination.

The form of evaluation in July and extraordinary is the same that in January.It does not exist possibility to improve the note of the practical part for the announcement of July, since it treats of activities programmed along the course.If the matter is not passed the student will have to study again adapting to the new educational guide.

Sources of information

Basic Bibliography

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Recommendations

Other comments

It is not indispensable to have studied economy , since it will realise a more detailed introduction to the matter.

Later, in fourth course of the Degree recommends to study the following matters that deepen in some appearances:

Industrial organisation and processes in the industry of the wood

Innovation and development of products in the industry of the wood.

It is recommended that the students keep upadte the telematic platform of support to the teaching (FAITIC). They will have to request the high to the start of the course to access to the on-line contents, available in the web: <http://faitic.uvigo.es>

IDENTIFYING DATA**Biology: Plant Biology**

Subject	Biology: Plant Biology			
Code	P03G370V01201			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Basic education	1st	2nd
Teaching language				
Department				
Coordinator	Souto Otero, José Carlos			
Lecturers	Souto Otero, José Carlos			
E-mail	csouto@uvigo.es			
Web	http://webs.uvigo.es/csouto/			
General description	Knowledge of the basic principles of the Vegetal Biology: anatomy, physiology and ecology of the plants.			

Competencies

Code		Typology
CG1	CG-01: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Biolóxicos.	- know
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG20	CG-20: Coñecemento das bases da mellora forestal e capacidade para a súa aplicación práctica á produción de planta e á biotecnoloxía.	- know - Know How
CE8	(*)CE-08: Coñecemento das bases e fundamentos biolóxicos do ámbito vexetal na enxeñaría.	- know
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How

Learning outcomes

Learning outcomes	Competences
They treat and they evaluate the distinguished competitions.	CG1 CG6 CG20 CE8 CT6

Contents

Topic
1.- Introduction to the vegetal Biology.
2.- General structure of the vegetal cells.
3.- The cellular division.
4.- Introduction to the vegetal anatomy.
Meristems.
5.- Parenchyma, collenchyma and sclerenchyma.
6.- Conductive fabrics. The xylem. The phloem.
7.- Epidermis. The peridermis.
8.- General structure of the vascular plants.
9.- The leaf.
10.- The flower.
11.- Alternation of generations in haplodiplontes.
12.- Fecundation.
13.- The plants and the water.
14.- Absorption of nutrients.
15.- The photosynthesis.
16.- The breath.
17.- Growth and development.
18.- Physiology of the seed.

Planning			
	Class hours	Hours outside the classroom	Total hours
Master Session	20	40	60
Case studies / analysis of situations	2	4	6
Autonomous troubleshooting and / or exercises	1	3	4
Presentations / exhibitions	1	5	6
Laboratory practises	25	25	50
Outdoor study / field practises	10	14	24

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

Methodologies	
	Description
Master Session	Exhibition of the contents of the *asignatura. They treat the competitions To2, To8, To25 and To61.
Case studies / analysis of situations	Formulation, analysis, resolution and debate of a problem or exercise related with the thematic of the *asignatura. They treat the competitions To2 and *B6.
Autonomous troubleshooting and / or exercises	Formulation, analysis, resolution and debate of a problem or exercise related with the thematic of the *asignatura, by part of the *alumnado. They treat the competitions To2 and *B6.
Presentations / exhibitions	Oral exhibition by part of the *alumnado of a concrete subject or of a work (previous presentation written). They treat the competitions To2, To8, To25 and To61.
Laboratory practises	Application to practical level of the theory of Vegetal Biology in the laboratory. They treat the competitions To2, To8, To25 and To61.
Outdoor study / field practises	Realisation of visits-exits to the field for the observation and study of the plants in his natural surroundings. They treat the competitions To2, To8, To25 and To61.

Personalized attention	
Methodologies	Description
Presentations / exhibitions	

Assessment			
	Description	Qualification	Evaluated Competences
Master Session	Examination: proof with questions of short answer and others of long answer. The students have to answer to the questions to show the knowledges purchased on the matter. They evaluate the competitions To2, To8, To25, To61 and *B6.	60	CG1 CG6 CG20 CE8 CT6
Presentations / exhibitions	It evaluates the preparation of the work and his oral exhibition. They evaluate the competitions To2, To8, To25 and To61.	20	CG1 CG6 CE8
Laboratory practises	Continuous evaluation of the activities realised in the practices, as well as of the memory that the students have to deliver when finalising the course. They evaluate the competitions To2, To8, To25 and To61.	20	CG1 CG6 CG20 CE8

Other comments and July evaluation
The second announcement evaluates the same that the ordinary announcement.

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Recommendations

IDENTIFYING DATA**Physics: Physics II**

Subject	Physics: Physics II			
Code	P03G370V01202			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Basic education	1st	2nd
Teaching language				
Department				
Coordinator	González Fernández, Pio Manuel			
Lecturers	González Fernández, Pio Manuel Hidalgo Robatto, Bettiana Marcela			
E-mail	pglez@uvigo.es			
Web				
General description	<p>Didactic aims</p> <p>Dominate the concepts and physical laws of the thermodynamics and electromagnetism.</p> <p>Differentiate the physical appearances *involucrados in the resolution of a problem of engineering.</p> <p>Analyse, interpret and explain physical situations **cotias.</p> <p>Resolve problems of thermodynamics and electromagnetism applied the engineering.</p> <p>Dominate experimental technicians and handle it of instrumentation for the measure of physical magnitudes.</p> <p>*Design and schedule an experimental setting in team related with appearances of the physics applied.</p> <p>Dominate the acquisition of experimental data and his statistical treatment</p> <p>Dominate technicians of graphic representation and calculation of parameters of adjust.</p> <p>Present a report or technical memory (oral and writing) with utilisation of the new technologies.</p>			

Competencies

Code	Typology
CG2 CG-02: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Físicos.	- Know How
CE6 (*)CE-06: Comprensión e dominio dos conceptos básicos sobre as leis xerais da termodinámica e o electromagnetismo e a súa aplicación para a resolución de problemas propios da enxeñaría.	- know - Know How
CT6 (*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How

Learning outcomes

Learning outcomes	Competences
Lana relation between competitions *and results, *and he weight of each competition inside wool matter show * in him *pdf *attach.	CG2 CE6
http://forestales.uvigo.es/sites/default/files/06%20**Fisica%20*II.*Pdf#**overlay-**context=are**content/competitions-*and-resulted-of-*learning-by-matter	CT6

Contents

Topic	
1.THERMODYNAMICS	1.1. INTRODUCTION TO THE THERMODYNAMICS 1.2. THERMODYNAMIC PRINCIPLES 1.3. IDEAL GASES
2.ELECTROSTATICS	2.1. PRINCIPLES OF THE ELECTROSTATICS 2.2. CONDENSERS AND DIELECTRIC 2.3. CONTINUOUS CURRENT
3.ELECTROMAGNETISM	3.1. MAGNETOSTATIC 3.2. ELECTROMAGNETIC INDUCTION 3.3. ALTERNATING CURRENT

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	20	30	50
Troubleshooting and / or exercises	15	22.5	37.5
Laboratory practises	17	25.5	42.5

Reports / memories of practice	1	15	16
Short answer tests	1.5	0	1.5
Troubleshooting and / or exercises	2.5	0	2.5

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

Methodologies

	Description
Master Session	Exhibition by part of the professor of the contents of the matter, foundations and theoretical bases and guidelines of the exercises to develop by the student.
Troubleshooting and / or exercises	The professor gives the general guidelines for the resolution of problems or exercises related with the matter. The student has to develop the suitable or correct solutions by means of the application of formulas and the application of procedures.
Laboratory practises	Activities realised in the laboratory of application of the knowledges to concrete situations and of acquisition of basic skills and *procedimentalEs related with the matter. The student adopts an active role, developing diverse actions (realisation of an experiment, setting, manipulation of scientific instrumentation and taking of experimental data) to build his knowledge (graphic representation and deduction of the physical law that governs the experiment).

Personalized attention

Methodologies	Description
Master Session	
Laboratory practises	
Troubleshooting and / or exercises	

Assessment

	Description	Qualification	Evaluated Competences
Reports / memories of practice	Formative evaluation, realised of a continuous way, carried out fundamentally in the classes of laboratory that allows a continuous follow-up and a *realimentación constructive. It will value the presence and active participation in classes and in works *grupales, by means of checklists and by direct observation, and the quality of the works and individual reports and of group.	20	CG2 CE6 CT6
Short answer tests	It will evaluate the theoretical and practical knowledges of the matter using like objective instrument the answer written of several questions of theoretical application-practical.	35	CG2 CE6 CT6
Troubleshooting and / or exercises	It will evaluate the theoretical and practical knowledges of the matter (35%) and the purchased in the classes of laboratory (10%) using like objective instrument the resolution written of problems and/or exercises.	45	CG2 CE6 CT6

Other comments and July evaluation

In each methodology (Memory of practices, Proof of short answer and Resolution of problems) requires show a basic competition and minimum, that establishes in $Apt \geq 30\%$. Numerical final qualification on scale of 10 points, according to the valid legislation.

Sources of information

Basic Bibliography

Complementary Bibliography

- Tipler P.A, Física, Barcelona, 1992, Ed. Reverté
- González P., Lusquiños F, Fundamentos Físicos para Forestais, Vigo, 2010, Servizo de Publicacións da Universidade de Vigo
- Sears F.W., Zemansky M.W., Young H.D., Freedman R.A, Física, México, 1999, Addison Wesley
- Gettys W.E., Keller F.J., Skove M.J, Física clásica y moderna, Madrid, 1992, McGraw-Hill
- González P., Lusquiños F, Física en imaxes, Vigo, 2007, Servizo de Publicacións da Universidade de Vigo

Recommendations

Subjects that are recommended to be taken simultaneously

Mathematics: Overview of mathematics/P03G370V01203

Subjects that it is recommended to have taken before

Physics: Physics I/P03G370V01102

Mathematics: Mathematics and IT/P03G370V01103

IDENTIFYING DATA**Mathematics: Overview of mathematics**

Subject	Mathematics: Overview of mathematics			
Code	P03G370V01203			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	9	Basic education	1st	2nd
Teaching language				
Department				
Coordinator	Botana Ferreiro, Francisco Ramón			
Lecturers	Botana Ferreiro, Francisco Ramón			
E-mail	fbotana@uvigo.es			
Web	http://webs.uvigo.es/fbotana/			
General description				

Competencies

Code		Typology
CG4	CG-04: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Matemáticos.	- know - Know How
CE5	(*)CE-05: Capacidade para a resolución dos problemas matemáticos que poidan presentarse na enxeñaría. Aptitude para aplicar os coñecementos sobre: ecuacións diferenciais e en derivadas parciais; métodos numéricos, algorítmica numérica, xeometría diferencial; cálculo diferencial e integral.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT3	(*)CBI 3: Capacidade de comunicación oral e escrita tanto na lingua vernácula como en linguas estranxeiras.	- know - Know How
CT4	(*)CBI 4: Coñecementos básicos de informática.	- know
CT5	(*)CBI 5: Capacidade de xestión da información.	- Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How
CT14	(*)CBS 2: Adaptación a novas situacións.	- Know be
CT15	(*)CBS 3: Creatividade.	- Know be

Learning outcomes

Learning outcomes	Competences
*CE-05: Capacity for the resolution of the mathematical problems that can pose in the engineering. Aptitude to apply the knowledges on: differential equations and in partial derivatives, numerical methods, algorithmic numerical, differential geometry, differential calculation and integral.	CG4 CE5 CT1 CT3 CT4 CT5 CT6 CT11 CT13 CT14 CT15

Contents

Topic	
Differential geometry	Functions of several real variables Curves and surfaces

Infinitesimal calculation	Concept of limit in \mathbb{R}^n Limit and continuity of vectorial functions of several real variables Jacobian Matrix multiple Integration Integrals of line
Differential equations	Resolution of ordinary differential equations Resolution of equations in partial derivatives
Numerical methods	Interpolation approximate Resolution of equations numerical Integration

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	30	48	78
Troubleshooting and / or exercises	10	16	26
Presentations / exhibitions	10	16	26
Laboratory practises	25	50	75
Troubleshooting and / or exercises	5	5	10
Long answer tests and development	5	5	10

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

Methodologies

Description
Master Session
Troubleshooting and / or exercises
Presentations / exhibitions
Laboratory practises

Personalized attention

Assessment

Description	Qualification	Evaluated Competences
Presentations / exhibitions	15	CG4 CE5 CT1 CT3 CT5 CT15
Troubleshooting and / or exercises	5	CG4 CE5 CT3 CT6 CT11 CT13 CT14
Master Session	20	CG4 CE5 CT1

Laboratory practises	40	CG4 CE5 CT4 CT6 CT11 CT13 CT14
Long answer tests and development	15	CG4 CE5 CT1 CT3 CT11
Troubleshooting and / or exercises	5	CG4 CE5 CT3 CT6 CT11 CT13 CT14

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Arthur Mattuck, Differential Equations, <http://ocw.mit.edu/OcwWeb/Mathematics/18-03Spring-2006/VideoLectures/index.htm>,

Paul Dawkins, Differential Equations, <http://tutorial.math.lamar.edu/classes/de/de.aspx>,

William Stein, Sage, <http://sagemath.org>,

Michael Corral, Vector Calculus, <http://www.mecmath.net/calc3book.pdf>,

Dale Hoffman, William Stein, David Joyner, Integral Calculus and Sage, <http://sage.math.washington.edu/home/wdj/teaching/calc2-sage/calc2-sage.pdf>,

Recommendations

Subjects that it is recommended to have taken before

Mathematics: Mathematics and IT/P03G370V01103

IDENTIFYING DATA**Chemistry: Chemistry**

Subject	Chemistry: Chemistry			
Code	P03G370V01204			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	9	Basic education	1st	2nd
Teaching language				
Department				
Coordinator	Cancela Carral, María Ángeles			
Lecturers	Cancela Carral, María Ángeles			
E-mail	chiqui@uvigo.es			
Web	http://faitic.uvigo.es/			
General description	(*)Esta materia pretende repasar e homoxenizar os conceptos básicos de química con fin de que sirvan de base para outras materias.			

Competencies

Code		Typology
CG3	CG-03: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Químicos.	- know - Know How
CE7	(*)CE-07: Coñecementos básicos da química xeral, química orgánica e inorgánica e as súas aplicacións na enxeñaría.	- know
CT4	(*)CBI 4: Coñecementos básicos de informática.	- know
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT8	(*)CBP 1: Capacidades de traballo en equipo, con carácter multidisciplinar e en contextos tanto nacionais como internacionais.	- Know be
CT9	(*)CBP 2: Habilidades nas relacións interpersoais.	- Know be
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How
CT16	(*)CBS 4: Liderado.	- Know be
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
	CG3 CE7 CT4 CT6 CT7 CT8 CT9 CT11 CT13 CT16 CT20

The relation between competitions and results, and the weight of each competition inside the matter show in the pdf attach.

http://forestales.uvigo.es/sites/default/files/07%20*Quimica.Pdf#*overlay-*context=is*/content/competitions-and-resulted-of-learning-by-matter

Contents

Topic	
1. Fundamental concepts.	Atoms. Periodic table. Molecules. Mixes. Units of concentration. Chemical reactions and stoichiometry.
2.- Atomic structure and chemical link.	Quantum mechanical description. Periodic properties. Covalent link. Geometry and hybridisation. Polarity. Ionic link and metallic Link. Intermolecular strengths

3. Gases, solids and liquids. Ideal gas, real gas. Liquid state and solid state.	Ideal gas, real gas. Liquid state and solid state.
4. Thermodynamics and Thermochemical	Energy. Enthalpy. Calorimetry. Free energy and spontaneity.
5.- Chemical balances	Balance Gaseous chemical, acid- Base, solubility, balance redox.
6.- Kinetical chemical	Speed of reaction and kinetical equation
7.- Basic concepts of organic chemistry.	Functional groups, isomerism. Reactions and intervals. Mechanisms of reaction
8.- Basic principles of inorganic chemistry	Metallurgy and chemistry of metals
9.- Chemical industrial.	Ways of operation. Processes and basic operations. Diagrams of flow.
10.- Exploitation Of the biomass. Biorefinery	Bioenergy utilization: biopetroleum, biogas, biodiesel and bioethanol Use alimentary: vitamins, mineral and feed. Harnessing Like biomaterials: bioplastics and biopolymers

Planning

	Class hours	Hours outside the classroom	Total hours
Laboratory practises	14	22	36
Group tutoring	2	4	6
Presentations / exhibitions	1	5	6
Troubleshooting and / or exercises	16	54	70
Master Session	45	62	107

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

Methodologies

	Description
Laboratory practises	Sessions of laboratory of two hours in groups of two students, of where will explain the appearances applied of the part of the theoretical contents. Each *prácticatiene incorporated a series of questions that have to be delivered before the realisation of the following practical. The competitions worked *aqui are: To60; *B1-*B12; To1; To4; To53; *B7; *B11; *B9; *B12; *B14; *B15; *B16; *B18; *B19; *B20
Group tutoring	*Tutorías Of compulsory assistance, in where the students explain the work realised on a number reduced of exercises proposed previously. The competitions worked *aqui are: To60; To4; *B1; *B12;
Presentations / exhibitions	Each student will have to realise an oral presentation and written of any of the practices realised in the laboratory. The competitions worked here are: To60; *B1; To4; *B3; *B5; *B7; *B12; *B16; *B18; *B19;
Troubleshooting and / or exercises	They will explain and/they will resolve it problems in groups reduced of students from a series of billed facilitated by the professor. The students will have to resolve a small number of exercises for each one of the subjects, that will have to deliver in the term indicated for *sua qualification. The competitions worked *aqui are: To60; *B1-*B12; To4; *B1; *B6; *B7; *B9; *B13
Master Session	Classes in the classroom to numerous groups, in where they explain the corresponding contents to each subject. The competitions worked *aqui are: To60;To1; To4; To53; *B20

Personalized attention

Methodologies	Description
Laboratory practises	They realise you practise them *basandose in the *metodologia of learning by projects.
Group tutoring	They resolve doubts of problems and exercises
Presentations / exhibitions	They present the projects of practices
Troubleshooting and / or exercises	They do seminars in class and deliver exercises to resolve home

Assessment

Description	Qualification Evaluated Competences
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Master Session	(*)Realizarse un examen final de toda a materia, basado en preguntas tipo test e exercicios numéricos. Asi mesmo poderanse realizar exames de control o largo de todo o curso.	50	CG3 CE7 CT6 CT20
Laboratory practises	(*)Evaluarase o traballo contínuo durante o curso (actitud, implicación e traballo en grupo) Evaluarase a calidade da memoria presentada de forma oral e escrita.	30	CG3 CE7 CT4 CT6 CT7 CT8 CT9 CT11 CT13 CT16 CT20
Troubleshooting and / or exercises	(*)Evaluarase a resolución dos exercicios entregados durante o curso.	20	CG3 CE7 CT6 CT11 CT13

Other comments and July evaluation

Approve the matter involves necessarily approve each one of the activities that the they constitute, so that *non can approve activities independently. Once approved all, the final note will be the sum of each one of the parts.

Sources of information

Basic Bibliography

BROWN, T.L. y otros, Química: la Ciencia Central, 7ª, Prentice-Hall, 1998,

CHANG, RAYMOND, Química, 6ª, McGraw-Hill, 1995,

PETRUCCI, HARWOOD, Química General, 8ª, Prentice Hall, 2003,

Willis, C.J., Resolución de problemas de química general, Reverté, 1980,

Complementary Bibliography

KOTZ, JOHN C.y otros, Química y Reactividad Química, International Thomson, 2005

Recommendations

Subjects that are recommended to be taken simultaneously

Mathematics: Overview of mathematics/P03G370V01203

Mathematics: Mathematics and IT/P03G370V01103

Other comments

*Consideranse Necessary previous requirements the following:

- Know the system of units.

- Know realise basic mathematical calculations.

- Know basic concepts of the type: atoms, element, composed, mix, density, composition *porcentual and inorganic basic formulation.

To surpass the *asignatura is necessary to achieve the less 50% of the qualification of each one of the sections *evaluables. The assistance the face-to-face educational activities are compulsory. Absences in the justified, upper 20% of the hours scheduled, suppose a suspense in each one of the sections and in consequence in the matter.

IDENTIFYING DATA**Mathematics: Statistics**

Subject	Mathematics: Statistics			
Code	P03G370V01301			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Basic education	2nd	1st
Teaching language	Spanish			
Department				
Coordinator	Iglesias Pérez, María Carmen			
Lecturers	Iglesias Pérez, María Carmen			
E-mail	mcigles@uvigo.es			
Web	http://webs.uvigo.es/mcigles/			
General description	(*)Esta materia ten como obxectivo proporcionar unha formación estatística básica en descrición de datos, cálculo de probabilidades e inferencia estatística, poñendo o acento nos aspectos aplicados á enxeñaría forestal.			

Competencies

Code		Typology
CG4	CG-04: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Matemáticos.	- know - Know How
CE11	(*)CE-11: Aptitude para aplicar os coñecementos sobre estatística e optimización. Programas informáticos estadísticos de interese en enxeñaría.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- Know How
CT12	(*)CBP 5: Desenvolver un compromiso ético, que implique o respecto dos dereitos fundamentais e de igualdade entre homes e mulleres, e dos principios de igualdade de oportunidades, accesibilidade universal a persoas con discapacidade e educación para a paz.	- Know be
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How
CT19	(*)CBS 7: Motivación pola calidade.	- Know be

Learning outcomes

Learning outcomes	Competences
(*)Purchase the basic statistical training in description of data, calculation of probabilities, statistical inference and optimisation in regression applied to the Forest Engineering.	CG4 CE11 CT1 CT6 CT11 CT12 CT13 CT19

Contents

Topic	
1. Sampling and descriptive statistics	1.1 Definition and field of application of the Statistics. 1.2 basic Concepts of sampling. Methods of random sampling. 1.3 descriptive Statistics: Measures of position, dispersion and form. 1.4 descriptive Statistics: Tables and graphic representations.
2. Probability	2.1 random Experiment. Sample space. Events. 2.2 Probability: concept, properties and methods of determination. 2.3 Probability conditioned. Independence of events. 2.4 fundamental Theorems: of the product, total probabilities and Bayes.

3. Random variables and remarkable distributions	<p>3.1 Concept of random variable (v.To.)</p> <p>3.2 random Variables discrete and continuous.</p> <p>3.3 Characteristics of a v.To.</p> <p>3.4 Models associated to a Process of Bernoulli.</p> <p>3.5 Models associated to a Process of Poisson.</p> <p>3.6 The Normal distribution.</p> <p>3.7 Other remarkable models.</p>
4. Intervals of confidence	<p>4.1 Estimator: concept and properties.</p> <p>4.2 The average, variance and proportion samples.</p> <p>4.3 Intervals of confidence for the average, variance and proportion.</p> <p>4.4 Calculation of the size of the sample.</p> <p>4.5 Intervals of confidence for the difference of averages and proportions.</p>
5. Contrasts of hypothesis	<p>5.1 Definition and classical methodology of a contrast: types of hypothesis, errors associated to the contrast, level of significance, region of rejection. Power.</p> <p>5.2 Critical Level or p-value.</p> <p>5.3 Contrasts for the comparison of averages and variances of two distributions normal.</p> <p>5.4 Contrast chi-square of independence.</p> <p>5.5 Contrasts of normality.</p>
6. Introduction to the models of regression	<p>6.1 Measurement of the linear association: covariance and coefficient of linear correlation.</p> <p>6.2 Formulation of the model of simple linear regression.</p> <p>6.3 Estimate of the parameters.</p> <p>6.4 Intervals of confidence and contrasts of hypothesis.</p> <p>6.5 Analyses of the variance and coefficient of determination. Goodness of adjust.</p> <p>6.6 Validation of the structural hypotheses.</p> <p>6.7 Prediction.</p> <p>6.8 linear Model general.</p> <p>6.9 Strategies of regression and comparison of models. Selection of optimum models.</p>

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	15	15	30
Troubleshooting and / or exercises	15	15	30
Autonomous troubleshooting and / or exercises	0	24	24
Practice in computer rooms	14	14	28
Tutored works	1.5	10	11.5
Long answer tests and development	2	12	14
Practical tests, real task execution and / or simulated.	1	7	8
Jobs and projects	2	2.5	4.5

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

Methodologies

	Description
Master Session	<p>(*) Exposición por parte do profesor dos fundamentos teóricos, que deberán estudarse fóra de clase.</p> <p>Ao principio de cada tema proporcionarase aos alumnos apuntes e/ou material para un mellor seguimento da clase.</p> <p>Trabállanse as competencias CG4 e CE11.</p>
Troubleshooting and / or exercises	<p>(*) Clases na aula dedicadas a resolver exercicios, e a expor, resolver ou analizar e interpretar problemas.</p> <p>Trabállanse as competencias CG4, CE11, CT1, CT6, CT11 e CT19.</p>
Autonomous troubleshooting and / or exercises	<p>(*) En cada tema os alumnos deberán traballar sobre un boletín para saber resolver problemas e exercicios similares aos de clase.</p> <p>Tamén se proporá indagar sobre cuestións de interese.</p> <p>Así mesmo, os alumnos realizarán cuestionarios de autoevaluación ao final dos temas ou bloques da materia.</p> <p>Trabállanse todas as competencias da materia.</p>

Practice in computer rooms	(*) Manexo de software estatístico por parte de cada alumno. Fundamentalmente usarase EXCEL ou CALC, e algo de R Commander. En cada tema, traballarase no computador seguindo un guión para aprender a aplicación, cálculo e interpretación dos conceptos e técnicas básicas de estatística sobre arquivos de datos relacionados co ámbito da Enxeñaría Forestal. Trabállanse as competencias CG4, CE11, CT1, CT6, CT11, CT12 e CT19.
Tutored works	(*) Os alumnos organizaranse en grupos de traballo para o estudo dun caso de datos reais ou dunha simulación. Cada grupo deberá elixir un problema relacionado co ámbito da Enxeñaría Forestal, obter ou simular datos relativos ao mesmo, describilos e analizalos estatisticamente e extraer algunhas conclusións relevantes. O traballo realizarase maioritariamente fora da aula, aínda que haberá unha parte de elaboración e supervisión presencial. Así mesmo a presentación do traballo será presencial. Trabállanse todas as competencias da materia.

Personalized attention

Methodologies	Description
Tutored works	

Assessment

	Description	Qualification Evaluated	Competences
Autonomous troubleshooting and / or exercises	(*) Avaliaranse as actividades (problemas, cuestións, exercicios de computador) entregadas durante o curso e os cuestionarios de autoevaluación.	20	CG4 CE11 CT1 CT6 CT11 CT12 CT13 CT19
Long answer tests and development	(*) Exame escrito de problemas e pequenas cuestións de teoría. Hai que sacar un mínimo para compensar (4 sobre 10).	50	CG4 CE11 CT1 CT6 CT11 CT12 CT19
Practical tests, real task execution and / or simulated.	(*) Exame do software estatístico na aula de informática. Hai que sacar un mínimo para compensar (4 sobre 10).	20	CG4 CE11 CT1 CT6 CT11 CT12 CT19
Jobs and projects	(*) Cualificación do contido e presentación do traballo de grupo.	10	CG4 CE11 CT1 CT6 CT11 CT12 CT13 CT19

Other comments and July evaluation

Sources of information

Basic Bibliography

Navidi, W., Estadística para Ingenieros y Científicos, Mc. Graw Hill, 2006

Cao Abad, R. y otros, Introducción a la Estadística y sus aplicaciones, Pirámide, 2001

Peña, D., Estadística. Modelos y Métodos. Fundamentos, Alianza Universidad, 1994

Complementary Bibliography

Alea Riera, V. y otros., Guía para el análisis estadístico con R Commander, Barcelona: Universidad de Barcelona, 2014

Pérez López, C., Estadística aplicada : conceptos y ejercicios a través de Excel, Madrid : Ibergarceta Publicaciones, 2012

Devore, J., Probabilidad y estadística para ingeniería y ciencias, Thomson, 2008

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Susan Milton, J., Estadística para Biología y Ciencias de la Salud, McGraw Hill Interamericana, 2007

Ríus, F., Barón, F.J., Sánchez, E. y Parras, L., Bioestadística: métodos y aplicaciones, SPICUM (U. Málaga), 1995

<http://www.aulafacil.com/Excel/temario.htm>,

<http://knuth.uca.es/moodle/mod/resource/view.php?id=1126>,

<https://estadisticaorquestainstrumento.wordpress.com/>,

Recommendations

Subjects that it is recommended to have taken before

Mathematics: Overview of mathematics/P03G370V01203

Mathematics: Mathematics and IT/P03G370V01103

IDENTIFYING DATA**Edaphology**

Subject	Edaphology			
Code	P03G370V01302			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	2nd	1st
Teaching language				
Department				
Coordinator	Marcet Miramontes, Purificación			
Lecturers	Marcet Miramontes, Purificación			
E-mail	marcet@uvigo.es			
Web				
General description				

Competencies

Code		Typology
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG7	CG-07: Capacidade para identificar os diferentes elementos: elementos físicos.	- know - Know How
CE10	(*)CE-10: Coñecementos básicos de xeoloxía e morfoloxía do terreo e a súa aplicación en problemas relacionados coa enxeñaría. Climatoloxía. Capacidade para coñecer, comprender e utilizar os principios de: ciencias do medio físico: xeoloxía, edafoloxía e climatoloxía.	- know
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- know - Know How
CT3	(*)CBI 3: Capacidade de comunicación oral e escrita tanto na lingua vernácula como en linguas estranxeiras.	- know - Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT8	(*)CBP 1: Capacidades de traballo en equipo, con carácter multidisciplinar e en contextos tanto nacionais como internacionais.	- Know be
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
(*)	CG6 CG7 CE10 CT1 CT2 CT3 CT6 CT7 CT8 CT20

Contents

Topic	
1. Introducción The wool environmental geology	Minerales, cristales and rocks. Geodynamic Internal. Geodynamic External. Geology of Galicia. Geological resources.
2. The soil: Approaches, work and study.	The soil: conceptual approaches. Edafic organizations. Edafology. The Science of the soil.

3. Ecological factors of training	Genesis of soils: factors and processes. Spatial variability of the soil. Horizonation. Ecological factors of training of soil.
4. Meteorization of rocks and minerals and edaphogenesis.	Weathering. Type and processes of weathering. Approach general of wool edaphogenesis. Conceptual model: basic processes in him development of the soil. Basic processes and resultant horizons. Weatherization and Deep geochemical
5 .Studio of the soils in him field. Morfology and description of the soils.	Place and pedión. Wool calcata. Morphology of the soil. Studio of wool internal organization of a soil. Interpretation of a profile of a soil. Properties and characteristics of a soil. You work of transferring. Description Of floors. Horizons of the soil: Horizons genetic and horizons of diagnosis
6. Physical properties and comportamiento of the soil.	The soil how system of three phases. Physical properties of the soil. Composition granulometric. Texture. Color. Structure of the soil: description of wool organization of wools individual particles. Density and porosity
7. Inorganic components of the soil	Origin of minerals of soil. The minerals Of wools particles of soil. Minerals Of wool fraction, sand and limo. Minerals Of wool fraction clay
8. Organic components of the soil.	Contributions Of organic subject. Organic subject of the soil and humus. You work of wool organic subject of the soil. Factors that influence in him content, class and evolution of wool organic subject of the soil. Relation C / N. Evolution of wool organic subject of the soil. Importance environmental of wool organic subject of the soil
9. Chemical properties, physical-chemical and behavior of the soil	Chemical of the soils. Forms in that find the chemical elements in the soils: bioavailability. Colloidal properties of the soil and react of surface. Capacity of exchange Cationic.Reaction of soil. Salinity, Sodcity and Alkalinity of soil. Potential of Oxidation-Reduction. Pollution of soils.
10. Ecology Of the soil and cycle of the element	Soil and biodiversity: flows of nutrient and energy. Rhizosphere. You work of the organisms in him soil. Cycles biogeochemicals.
11. Water Of soil: content, potentials and movement.	Content Of water in him soil. Measure of the content of water in him soil. Energy of water in soil: potential water and its components. Hydraulic conductivity. Infiltration. Classes of drainage
12. Introduction The wool classification of the soils.	Wool classification of soils. Soil Taxonomy. World Reference Base was Soil Resources.
13. Quality and sustainability: Forests and quality of the ecosystem	I have ecosystem forest and I soil. Management or forest management sustainable. Quality of the soil. Indicators Of quality. Evaluation of wool quality of forest soils
14. Climatology	Factors that condition wool expression of a climate. Elements of the climate. Atmospheric circulation. Analysis and prediction Of the time. Wools climatic classifications.

Planning

	Class hours	Hours outside the classroom	Total hours
Laboratory practises	16	14	30
Outdoor study / field practices	5	2	7
Presentations / exhibitions	3	20	23
Master Session	30	60	90

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

Methodologies

	Description
Laboratory practises	Activities of application of the knowledge to concrete situations and of acquisition of basic and procedural skills related to the subject matter of study. They are developed in special spaces with specialized equipment (scientific-technical laboratories, languages, etc.).
Outdoor study / field practices	Activities of application of the knowledge to concrete situations and of acquisition of basic and procedural skills related to the subject matter of study. They are developed in non-academic outer spaces. Among them we can mention field practices, visits to events, research centers, companies, institutions ... of academic-professional interest for the student
Presentations / exhibitions	Exposition by the student to the teacher and / or a group of students of a topic about contents of the subject or the results of a work, exercise, project ... It can be carried out individually or in a group.

Master Session Teacher presentation of contents on the subject matter of study, theoretical bases and / or guidelines of a work, exercise or project to be developed by the student

Personalized attention

Methodologies	Description
Laboratory practises	
Outdoor study / field practices	
Presentations / exhibitions	

Assessment

	Description	Qualification	Evaluated Competences
Master Session		60	CE10 CT1 CT6
Laboratory practises		20	CT1 CT2 CT6 CT7 CT8 CT20
Presentations / exhibitions		20	CT2 CT3 CT20

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

PORTA, J., LÓPEZ-ACEBEDO, M. , ROQUERO DE LABURU, C., Edafología para la agricultura y el medio ambiente, 2003, Mundi Prensa

PORTA, J; LÓPEZ-ACEVEDO, M , POCH, R.M., Introducción a la Edafología: Uso y Protección del Suelo, 2008, Mundi - Prensa

PORTA, J. ,LÓPEZ-ACEVEDO M., Agenda de campo de suelos. Información de suelos para la agricultura y el medio ambiente. del suelo., 2005, Mundi-Prensa

BRADY, N. C., "Elements of the Nature and Properties of Soils", 2010, Pearsons,

WHITE R., Principles and practice of soil science, 2007, Blackwell

CHARMAN P., MURPHY B., Soils . Their properties and management, 2007, Oxford

BLANCO H., LAL R., Principles of soil conservation and management, 2008, Springer

FUENTES YAGÜE J.L., Iniciación a la meteorología y climatología agrícola, 2000, Mundi-Prensa

Ledesma, Manuel, , "Climatología y meteorología agrícola", , 2000, Paraninfo

Elías Castillo, Francisco / Castellví Sentís, Francesc., "Agrometeorología", , 2001, Mundi-Prensa

Recommendations

IDENTIFYING DATA				
Botany				
Subject	Botany			
Code	P03G370V01303			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	2nd	1st
Teaching language				
Department				
Coordinator	Paz Bermudez, Maria Graciela			
Lecturers	Paz Bermudez, Maria Graciela			
E-mail	graciela@uvigo.es			
Web	http://http://faitic.uvigo.es/index.php/es/			
General description	(*)Coñece-los conceptos básicos e a terminoloxía específica para aprender a diferenza-los grandes grupos de organismos que estuda a Botánica, incidindo nos grupos con maior presenza no ámbito forestal galego.			

Competencies		
Code		Typology
CG1	CG-01: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Biolóxicos.	- know - Know How
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG14	CG-14: Capacidade para o uso das técnicas de protección do medio forestal.	- Know How
CG16	CG-16: Capacidade para o uso das técnicas de conservación da biodiversidade.	- Know How
CE15	(*)CE-15: Capacidade para coñecer, comprender e utilizar os principios de: botánica forestal.	- know - Know How
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes	
Learning outcomes	Competences
(*)	CG1 CG6 CG8 CG14 CG16 CE15 CT20

Contents	
Topic	
1. Concept of Botanist.	Categories and taxonomic unities. Botanic nomenclature.
2. Morphological levels of vegetal organization.	Traffic of Therophytes to Cormophytes. Generalities of the vascular plants and its adaptive advantages.
3. The reproduction	Types of reproduction. Biological cycles. Alternation of generations and his importance.
4. The plants with seed (Spermatophytes).	General characters. Root and cut. Main type and modifications. The leaf, special trainings and phylotaxic. Forms of life.
5. The flower.	Concept of flower in gymnosperms and angiosperms. Floral receptacle. Perianth. Androceo. Xineceo. Inflorescences
6. Pollination	Main type and floral syndromes. Evolution of the flower in relation of type of pollination

7. Fertilization	Differences between the fertilization in Gymnosperms and Angiosperms. Training of the seed. Fruits and Infoscences. Dispersion.
8. Gymnosperms	General characters. Reproduction: Vital cycle. Main groups. Division Cycadophyta. Division Ginkgophyta.
9. Division Coniferophyta. General characteristics.	General characteristics. Class Coniferopsida
Class Coniferopsida	
10. Order Coniferales, Family Pinaceae.	General characteristics. Ecological importance, forestal and economic. Genders more representative.
11. Family Cupressaceae.	General characteristics. Genders more representative.
12. Family Taxodiaceae.	General characters. Genders more relevants. Forestal importance and examples. Family Araucariaceae, species more relevants.
13. Quotation of the families Podocarpaceae and Cephalotaxaceae. Order Taxales, Family Taxaceae, species more relevants and forestal importes.	(*)
14. Anxiospermas. Div. Magnoliophyta General characters.	Reproduction: Vital cycle. Differential characters go in the classes Magnoliopsida (Dicotyledonous) and Liliopsida (monocotiledóneas).
15. Magnolipsida Class (dicotyledonous). Subclass 1: Magnoliidae. General characters.	Families: Magnoliaceae, Lauraceae, Ranunculaceae, Berberidaceae. Genders and species more important and examples.
16. Subclass 2: Hamamelididae.	General characters of the families Hamamelidaceae and Platanaceae. Species of forestal and ornamental interest.
17. Special quotation of the families Fagaceae and Betulaceae.	Genders and species more relevants. Ecological and economic interest.
18. Family Juglandaceae. General characters of the families Ulmaceae and Moraceae.	(*)
19. Subclass 3: Caryophyllidae.	General characters. Quotation of the most important orders. Examples.
20. Subclass 4: Dilleniidae.	General characters of the families of main economic and forestall: Theaceae, Tiliaceae, Cistaceae, Salicaceae, Brasicaceae, Ericaceae.
21. Subclass 5: Rosidae.	Families of main forstal interest: Rosaceae, Leguminosaceae, Myrtaceae, Aquifoliaceae, Rutaceae, Anacardiaceae, Hippocastanaceae, Aceraceae, Rhamnaceae, Buxaceae.
22. Subclass 6: Asteridae.	Quotation of the most representative families: Solanaceae, Caprifoliaceae, Lamiaceae, Oleaceae and Asteraceae
23. Class Liliopsida (monocotiledoneas).	Differential characters and families more significant.
24. Concept of Geobotanic	Distribution of the plants and floristic territories. Biogeographic kingdoms.

Planning

	Class hours	Hours outside the classroom	Total hours
Outdoor study / field practices	2	0	2
Laboratory practises	16	10	26
Autonomous troubleshooting and / or exercises	4	28	32
Master Session	30	60	90

*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	Activities application of knowledge to specific situations and basic skills acquisition and related procedural matter under study. They thrive in nonacademic outdoor spaces. Among them we can cite practical field visits to events, research centers, companies, institutions ... academic-professional interest to the student.
Laboratory practises	Activities application of knowledge to specific situations and basic skills acquisition and related procedural matter under study. Special spaces are developed with specialized equipment (scientific and technical laboratories, languages, etc.).
Autonomous troubleshooting and / or exercises	Actividade in which problems are formulated and / or exercises related to the course. The student must develop the analysis and resolution of problems and / or exercises independently.
Master Session	Presentation by the teacher of the contents on the subject under study, theoretical and / or guidelines for a job, exercise or project to be developed by the student.

Personalized attention	
Methodologies	Description
Laboratory practises	
Autonomous troubleshooting and / or exercises	

Assessment			
	Description	Qualification	Evaluated Competences
Master Session	(*)Proba con preguntas tipo test, de resposta curta e de resposta longa; o alumnado deberá demostrar os coñecementos adquiridos. Avalían-se as competencias A2,A8,A68	70	CG1 CG6 CE15
Laboratory practises	(*)Farase unha avaliación continua ó alumnado das actividades plantexadas nas clases prácticas.Ó final do curso o alumnado deberá entregar unha memoria final e/ou realizar unha proba sobre identificación de distintos pliegos de especies forestais. Avalíanse as competencias A10,A18,A20	20	CG8 CG14 CG16
Outdoor study / field practices	(*)No exame de laboratorio integranse os coñecementos adquiridos nas saídas de campo. Avalíase a competencia B20	5	CT20
Autonomous troubleshooting and / or exercises	(*)No exame da sesión magistral integranse os coñecementos adquiridos coa resolución de problemas dun xeito autónomo. Ó final do curso o alumnado deberá entregar un herbario formado, principalmente, polas especies forestais tratadas na parte teórica e/ou un traballo bibliográfico ou de investigación. Estes coñecementos poderán integrarse no exame de laboratorio ou valorarse dun xeito independente Avalíanse as competencias A68,B20	5	CE15 CT20

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

- Díaz González T. E., Fernández-Carvajal M. C., Fernández Prieto J. A., Curso de Botánica, Ed. Trea, Oviedo, 2004
- Izco J. (coord.), Botánica, Ed. McGraw- Hill. Interamericana, Madrid., 2004
- Nabors M.W., Introducción a la Botánica, Ed. Pearson, Madrid., 2006
- Strasburger, E., Tratado de Botánica, Ed. Omega, Barcelona, 2004
- Blanco Castro, E. et al., Los Bosques Ibéricos. Una interpretación Geobotánica., Ed. Planeta, Barcelona, 2005
- Castro, M.; Prunell, A. & Blanco-Dios, J., Guía das árbores autóctonas e ornamentais de Galicia., Ed. Xerais, Vigo, 2007
- Castroviejo,S. (coord.), Flora iberica: Plantas vasculares de la Península Ibérica e Islas Baleares., Real Jardín Botánico, C.S.I.C. Madrid, 1986-2010
- García, X.R., Guía das plantas de Galicia, Ed. Xerais, Vigo, 2008
- López González, G., Guía de los árboles y arbustos de la península Ibérica y Baleares, Mundi-Prensa Libros, 2007
- Carrión, J.S., Evolución vegetal, DM, 2003
- Niño Ricoi, H., Guía das árbores de Galicia, Bahía, 1997
- Polunin, O. & Smythies, B.E., Guía de campo de las flores de España, Portugal y Sudoeste de Francia, Omega, 2004

Recommendations

Subjects that continue the syllabus

Biology: Plant Biology/P03G370V01201

Forestry Ecology/P03G370V01402

IDENTIFYING DATA**Electrotechnology and rural electrification**

Subject	Electrotechnology and rural electrification			
Code	P03G370V01304			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	2nd	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Moldes Eiroa, Ángel			
Lecturers	Moldes Eiroa, Ángel			
E-mail	angelmoldes@uvigo.es			
Web				
General description	(*)Se estudiarán los principios de funcionamiento de la electricidad y los circuitos eléctricos, así como los componentes, el diseño y el cálculo de una instalación eléctrica.			

Competencies

Code		Typology
CG28	CG-28: Coñecementos das seguintes materias necesarios tanto para a xestión dos sistemas forestais como para a súa conservación: electrificación.	- know
CE14	(*)CE-14: Capacidade para coñecer, comprender e utilizar os principios de: electrotecnia e electrificación forestais.	- know - Know How

Learning outcomes

Learning outcomes	Competences
(*)	CG28 CE14

Contents

Topic
INTRODUCTION AND AXIOMS
CIRCUITS OF CONTINUOUS CURRENT
CIRCUITS OF ALTERNATES CURRENT
TRIFÁSIC SYSTEMS BALANCED
OPERATION OF THE NATIONAL ELECTRICAL SYSTEM
ELEMENTS OF AN ELECTRICAL SYSTEM
CALCULATION OF ELECTRICAL INSTALLATIONS
ELECTRONIC REGULATION FOR LOW TENSION

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	16	16	32
Troubleshooting and / or exercises	16	48	64
Laboratory practises	16	0	16
Practice in computer rooms	12	18	30
Troubleshooting and / or exercises	3	0	3
Short answer tests	1	0	1
Jobs and projects	4	0	4

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

Methodologies

	Description
Master Session	EXHIBITION BY PART OF The PROFESSOR OF The THEORETICAL BASES OF The ASIGN#PUT
Troubleshooting and / or exercises	FORMULATION And RESOLUTION OF PROBLEMS RELACCIONED WITH The ASIGN#PUT
Laboratory practises	ACTIVITIES OF APPLICATION OF KNOWLEDGES IN SPACES WITH SPECIALIZED EQUIPMENT
Practice in computer rooms	ACTIVITIES OF APPLICATION OF KNOWLEDGES IN CLASSROOM OF COMPUTING

Personalized attention

Methodologies	Description
Master Session	
Troubleshooting and / or exercises	
Practice in computer rooms	
Laboratory practises	

Assessment

	Description	Qualification	Evaluated Competences
Laboratory practises	EVALUATED BY MEANS OF IT DELIVERS OF A MEMORY WITH The RESULTED NUMERICAL OBTAINED IN The PRACTICAL	10	CG28 CE14
Short answer tests	EVALUATED BY MEANS OF The FORMULATION OF QUESTIONS THAT The STUDENT WILL OWE to ANSWER OF FORM WRITTEN	20	CG28 CE14
Troubleshooting and / or exercises	EVALUATED BY MEANS OF The FORMULATION OF PROBLEMS THAT The STUDENT WILL OWE to ANSWER OF FORM WRITTEN	40	CG28 CE14
Jobs and projects	EVALUATED The QUALITY OF ONE PROJECT OF ELECTRIC INSTALLATION CALCULATED POLE STUDENT	30	CG28 CE14

Other comments and July evaluation**Sources of information****Basic Bibliography****Complementary Bibliography**

PARRA, PEREZ, PASTOR, ORTEGA, TEORÍA DE CIRCUITOS, 2003, UNED

GONZÁLEZ, GARRIDO, CIDRÁS, EJERCICIOS RESUELTOS DE CIRCUITOS ELÉCTRICOS, 1999, ANDAVIRA EDITORA

SPITTA, INSTALACIONES ELÉCTRICAS, 1980, DOSSAT

MINISTERIO CIENCIA Y TECNOLOGÍA, R.D. 842/2002 REGLAMENTO ELECTROTÉCNICO PARA BAJA TENSIÓN, 2002, BOE

MINISTERIO CIENCIA Y TECNOLOGÍA, R.D.223/2008 REGLAMENTO DE LÍNEAS ELÉCTRICAS DE ALTA TENSIÓN, 2008, BOE

MINISTERIO CIENCIA Y TECNOLOGÍA, R.D.337/2014 REGLAMENTO SOBRE CONDICIONES TÉCNICAS Y GARANTÍAS DE SEGURIDAD EN INSTALACIONES ELÉCTRICAS DE ALTA TENSIÓN, 2014, BOE

Recommendations**Subjects that it is recommended to have taken before**

Physics: Physics I/P03G370V01102

Physics: Physics II/P03G370V01202

Mathematics: Overview of mathematics/P03G370V01203

Mathematics: Mathematics and IT/P03G370V01103

IDENTIFYING DATA**Forest entomology and Zoology**

Subject	Forest entomology and Zoology			
Code	P03G370V01305			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	2nd	1st
Teaching language				
Department				
Coordinator	Paz Bermudez, Maria Graciela			
Lecturers	López de Silanes Vázquez, María Eugenia Paz Bermudez, Maria Graciela Souto Otero, José Carlos			
E-mail	graciela@uvigo.es			
Web	http://http://faitic.uvigo.es/index.php/es/			
General description	(*)Esta materia ensina ó alumnado os fundamentos de zooloxía, con énfase nas especies máis comúns nos nosos bosques. Dada a gran importancia da entomoloxía no medio forestal, unha parte importante da materia adicarase a esta disciplina. Finalmente, outro bloque de temas centrarase en xenética, especialmente na de poboacións, co fin de que o alumno poida adquirir uns coñecementos fundamentais para comprende-la dinámica e a evolución das poboacións animais.			

Competencies

Code		Typology
CG1	CG-01: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Biolóxicos.	- know - Know How
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG16	CG-16: Capacidade para o uso das técnicas de conservación da biodiversidade.	- Know How
CE13	(*)CE-13: Capacidade para coñecer, comprender e utilizar os principios de: zooloxía e entomoloxía forestais; fundamentos biolóxicos do ámbito animal na enxeñaría.	- know - Know How
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
(*)	CG1 CG6 CG8 CG16 CE13 CT20

Contents

Topic	
I. General zoology	1. Introduction to the zoology 2. Structure of the animal cells 3. The cellular division 4. The fabrics
II. Genetic	1. Introduction to the mendelism 2. Nature of the hereditary material 3. Genetic structure of the populations 4. Changes of the genic frequencies 5. The continuous variation

III. Descriptive zoology

1. General characters of the invertebrates
2. Entomology. Characteristic and importance of the insects
3. Cordados. Introduction to fishes, amphibious and reptilian
4. Birds and mammalian

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	32	48	80
Laboratory practises	16	26	42
Troubleshooting and / or exercises	4	24	28

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

Methodologies

	Description
Master Session	Presentation by the teacher of the contents on the subject under study, theoretical and / or guidelines for a job, exercise or project to be developed by the student.
Laboratory practises	Activities application of knowledge to specific situations and basic skills acquisition and related procedural matter under study. Special spaces are developed with specialized equipment (scientific and technical laboratories, languages, etc.).
Troubleshooting and / or exercises	Activity which formulated problem and / or exercises related to the course. The student should develop appropriate solutions or right through the exercise routines, application of formulas or algorithms, application processing procedures available information and interpretation of the results. It is often used to complement the lecture.

Personalized attention

Methodologies	Description
Master Session	
Laboratory practises	

Assessment

	Description	Qualification	Evaluated Competences
Master Session	(*)1.-Probas de tipo test 2.-Probas de respuesta corta 3.-Probas de respuesta larga, de desarrollo	75	CG1 CG6 CG8 CG16 CE13 CT20
Troubleshooting and / or exercises	(*)	5	CG16
Laboratory practises	(*)Informes/memorias de prácticas e/ou examen práctico	20	CG6 CG8 CG16 CE13 CT20

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Davies RG, Introducción a la entomología, 1989, Mundi-Prensa

Falconer DS, Mackay TFC, Introducción a la genética cuantitativa, 1996, Ed. Acribia

Hickman CP, Roberts LS, Keen S, Larson A, l'Anson H, Eisenhour D, Principios integrales de zoología, 2009, McGraw-Hill Interamericana

Paniagua R (coordinador), Citología e histología vegetal y animal, 2007, Mcgraw-Hill Interamericana

Barrientos JA (ed), Curso práctico de entomología, 2004, : Asociación Española de Entomología ; Alicante :

Carlos de Liñán Vicente (coord), Entomología agroforestal, 1998, Madrid : Ediciones Agrotécnicas, D.L.

Chinery, M., Guía de campo de los insectos de España y de Europa, 2005, Omega

Recommendations

Subjects that are recommended to be taken simultaneously

Forestry Ecology/P03G370V01402

Mathematics: Statistics/P03G370V01301

IDENTIFYING DATA				
Forestry				
Subject	Forestry			
Code	P03G370V01401			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	2nd	2nd
Teaching language				
Department				
Coordinator	Picos Martín, Juan			
Lecturers	Picos Martín, Juan			
E-mail	jpicos@uvigo.es			
Web	http://silvicultor.blogspot.com/			
General description	<p>The general aims of the *asignatura are:</p> <p>to) Know the bases, object and foundations of the *Selvicultura</p> <p>*b) Know the foundations of the *Selvicultura Static</p> <p>*c) Know the foundations of the *Selvicultura Dynamic</p> <p>*d) Know the cultural characters of the forest species</p> <p>and) That the professional future was able to analyse and interpret the mountain to be able to propose suitable treatments in each case.</p>			

Competencies		
Code		Typology
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG7	CG-07: Capacidade para identificar os diferentes elementos: elementos físicos.	- know - Know How
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG9	CG-09: Capacidade para analizar a estrutura e función ecolóxica dos sistemas e recursos forestais, incluíndo as paisaxes.	- Know How
CG22	CG-22: Capacidade para aplicar e desenvolver as técnicas selvícolas e de manexo de todo tipo de sistemas forestais, parques e áreas recreativas.	- know - Know How
CE17	(*)CE-17: Capacidade para coñecer, comprender e utilizar os principios de: silvicultura.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT5	(*)CBI 5: Capacidade de xestión da información.	- Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How
CT14	(*)CBS 2: Adaptación a novas situacións.	- Know be
CT15	(*)CBS 3: Creatividade.	- Know be

Learning outcomes	
Learning outcomes	Competences

New

Contents

Topic	
Subject I.- Concept and bases of the forestry	1. Concept and classes of forestry 2. Static study of masses
Subject II.- Forestry treatments	3. Dynamic study of the masses. 4. Influence of the ecological factors. 5. Classification of the forestry treatments. 6. Short to fact 7. Short by aclareo successive uniform 8. Short by entresaca 9. Complementary treatments, partial and derivative. 10. Treatments of low mountain and m.Half. 11. Transitory treatments 12. Forestry And defence of the mountain
Subject III.- Main cultural characters Forest species	13. Description of the cultural characters of the main forest species

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	25.5	47.5	73
Troubleshooting and / or exercises	8	14	22
Outdoor study / field practices	8	8	16
Integrated methodologies	1	11.5	12.5
Case studies / analysis of situations	10.5	14	24.5
Multiple choice tests	0.5	0	0.5
Short answer tests	0.5	0	0.5
Practical tests, real task execution and / or simulated.	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
Master Session	Masterclasses in classroom
Troubleshooting and / or exercises	Resolution of problems and/or exercises in classroom, laboratory or in field.
Outdoor study / field practices	Visit to mountains and forestry works.
Integrated methodologies	- Organization of seminars or specific conferences - Presentations/exhibitions: oral Exhibition by part of the students of a concrete subject or of a work (generally previous presentation written). - Multimedia sessions: Employment of videographic material / on-line on appearances of the subject. - Days of study of appearances previously studied/analysed in the exits of field
Case studies / analysis of situations	- Study of cases/analysis of situations or discussion directed: Formulation, analysis, resolution and debate of a problem or exercise related with the thematic of the subject.

Personalized attention

Methodologies	Description
Case studies / analysis of situations	
Troubleshooting and / or exercises	
Outdoor study / field practices	

Assessment

	Description	Qualification Evaluated	Competences
Case studies / analysis of situations	Proof written and/or oral on the similar cases to the resolved in class	20	CG6 CG7 CG8 CG9 CG22 CE17 CT1 CT6 CT11
Integrated methodologies	Proof written and/or *docuemnto memory summary on the activities *desarrolladas	20	CG6 CG7 CG8 CG9 CG22 CE17 CT1 CT5 CT11 CT13 CT15
Master Session	.	0	CG6 CG7 CG8 CG9 CG22 CE17
Multiple choice tests	Proof written on the teaching given in sessions *magistrales	30	CG6 CG7 CG8 CG9 CG22 CE17 CT11 CT13
Short answer tests	Proof written on the teaching given in sessions *magistrales	30	CG6 CG7 CG8 CG9 CG22 CE17 CT11 CT13

Other comments and July evaluation

To approve the matter have to surpass the common examinations and realise satisfactorily the works that *eventualmente commission . The presence in practise and trips is compulsory. They will not save classifications of the theoretical notes, further of the announcements regulated of the academic year. The proofs of type test in the *convocatorias of examination can have eliminatory character.

Sources of information

Basic Bibliography

Complementary Bibliography

Serrada, R., Montero, G. y Reque, J. Eds, Compendio de *Selvicultura Aplicada en España, Madrid : Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria : Fundación Conde de, 2008

González Molina, José María, Introducción a la selvicultura general, León : Universidad, Secretariado de Publicaciones, 2005

Recommendations

Subjects that continue the syllabus

Forest exploitation/P03G370V01601

Dasometry/P03G370V01602

Forest management/P03G370V01605

Repopulation/P03G370V01603

Forest and pasture management/P03G370V01704

Subjects that are recommended to be taken simultaneously

Botany/P03G370V01303

Forestry Ecology/P03G370V01402

Subjects that it is recommended to have taken before

Biology: Plant Biology/P03G370V01201

IDENTIFYING DATA**Forestry Ecology**

Subject	Forestry Ecology			
Code	P03G370V01402			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	2nd	2nd
Teaching language	Spanish Galician			
Department				
Coordinator	Cordero Rivera, Adolfo			
Lecturers	Cordero Rivera, Adolfo Rivas Torres, Anais Sobrino Garcia, Maria Cristina Villamaña Rodríguez, Marina			
E-mail	adolfo.cordero@uvigo.es			
Web	http://ecoevo.uvigo.es			
General description	(*)A Ecoloxía é a ciencia que estudia a resposta dos organismos ás variacións ambientais, dende o nivel individual ao ecosistema. Esta materia ten como obxectivos proporcionar os coñecementos básicos da Ecoloxía, con especial referencia ao ambiente forestal.			

Competencies

Code		Typology
CG1	CG-01: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Biolóxicos.	- know - Know How
CG2	CG-02: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Físicos.	
CG3	CG-03: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Químicos.	
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG7	CG-07: Capacidade para identificar os diferentes elementos: elementos físicos.	
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG9	CG-09: Capacidade para analizar a estrutura e función ecolóxica dos sistemas e recursos forestais, incluíndo as paisaxes.	- Know How
CG10	CG-10: Coñecemento dos procesos de degradación que afecten aos sistemas e recursos forestais: contaminación.	- know
CG11	CG-11: Coñecemento dos procesos de degradación que afecten aos sistemas e recursos forestais: pragas.	- know
CG13	CG-13: Coñecemento dos procesos de degradación que afecten aos sistemas e recursos forestais en xeral.	- know
CG16	CG-16: Capacidade para o uso das técnicas de conservación da biodiversidade.	- Know How
CG17	CG-17: Capacidade para avaliar e corrixir o impacto ambiental.	
CE12	(*)CE-12: Capacidade para coñecer, comprender e utilizar os principios de: ecoloxía forestal	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT15	(*)CBS 3: Creatividade.	
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
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CE12: Capacity to know, understand and use the principles of Ecology in Forestry. Capacity to know, understand and use the concept of ecosystem. CE03 Ability to understand and apply the evolutionary theory in forest management. CE04 Ability to know and develop demographic analyses in Forestry. CE05 Ability to identify and use ecological interactions in the analysis of forest ecosystems. CE06 Capacity to know, understand and maintain biological diversity in exploited forest ecosystems. CE07 Capacity to develop analyses of energy and matter fluxes in forest ecosystems. CE08 Ability to understand the implications of ecological succession in the management of forest ecosystems. CE09 Ability to know, analyse and control the negative effects of pollution on forest ecosystems. CE10 Ability to know, understand and use ecological principles in the exploitation of populations and control of forest pests. CE11 Capacity to know, understand and use basic principles of conservation biology on the management of forest ecosystems	CG1 CG2 CG3 CG6 CG7 CG8 CG9 CG10 CG11 CG13 CG16 CG17 CE12 CT1 CT6 CT15 CT20
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New

Contents

Topic

0. ORGANIZATION DO COURSE. FORESTS AND FOREST PLANTATIONS.	Development of the subject. Techniques of evaluation of the student: objectives and methods. Forests and plantations: differences and similitudes. The principles of Forest Ecology.
SECTION I. 1. INTRODUCTION TO ECOLOGY.	The concept of sustainability. The demographical problem (implications of human growth population on natural resources). Introduction to Ecology. Levels of biological organization and subdivisions of Ecology. The concept of ecosystem. Forest Ecology and the principle of determinism. The scientific method. Introduction to ecological economics (National accounting and the loss of natural resources. The ecospace and the ecological footprint). Ecology and environmentalism.
SECTION II. THE ENVIRONMENT. 2. THE MATCH BETWEEN ORGANISMS AND THE ENVIRONMENT.	Genotypic and phenotypic variation. Natural selection. Ecotypes. Concept of resource and ecological factor. Ecological effects of solar radiation (Photosynthesis, index of foliar surface, morphology, shadow tolerance, photoperiodism). The temperature and the organisms (Q10, diapause, physiological time, effects on plants, adaptations of plants to unfavourable temperatures). Atmospheric humidity and vegetal adaptations. Effects of the wind on vegetation (dissemination of reproductive propagules, physiological effects, morphological effects). Adaptations to fire.
3. FOREST IMPLICATIONS OF BIOLOGICAL ADAPTATION.	Implications of evolutionary concepts in the exploitation of forests. Importance of the factor light in forestry. Importance of the factor temperature in forestry. Importance of water in forestry. Importance of the wind in forestry.
SECTION III. ECOLOGY OF POPULATIONS. 4. DEMOGRAPHY.	Concept of population. Unitary and modular organisms. Construction and analysis of life tables. Survivorship curves. Age pyramids. Populational growth (geometrical growth, mathematical models, intrinsic rate of growth, innate capacity of increase). Populational growth and intraspecific competition: concept of carrying capacity. Analysis of key factors.
5. INTERACTIONS (I): COMPETITION AND PREDATION.	Theory of niche: concept, multidimensional approach. The relationship between niche and habitat. Type of interactions between organisms. Intraspecific competition (exploitation, interferencie, densodependency, population regulation, asymmetry). Allelopathy. Interspecific competition (logistical model, model of Tilman). Principle of competitive exclusion. Character displacement. Type of predators. Model of Lotka-Volterra. Examples in the laboratory and the field. Strategies in the search of food. Functional responses. Coevolution prey-predator. Mechanisms of defence of the prey (physical defences, chemical, crypsis, aposematism, mimicry). Interaction herbivores-plants.
6. INTERACTIONS (II): MUTUALISM AND DETRITIVORY.	Concept of mutualism. Types of mutualism (behaviour, care, polinizaci3n, intestinal, symbiosis, mycorhyzes). Lichens. Leguminous plants and Rhizobium. Decomposers: Bacteria and fungi. Soil detritivores (earthworms, insects). Aquatic detritivores. Relative role of microflora and detritivores. Interactions detritivore-resource (vegetal detritus, faeces, carrion).

SECTION IV. ESTRUCTURA AND ORGANIZATION OF ECOSYSTEMS.	Concept. Characteristics of the community. Physical structure (stratification, forms of growth, biomass). Seasonality (Temperate zones, tropical zones). Concept of ecotone (effect of border, ecotones between forests and grasslands). Concept of guild.
7. THE BIOLOGICAL COMMUNITY.	
8. DIVERSITY IN FOREST ECOSYSTEMS.	Concept and type of diversity. Why preserve biodiversity? The measure of the biodiversity (index of Shannon, rank-abundance plots). Latitudinal gradient of biodiversity. Main forest activities and their effect on biodiversity. Techniques for maintaining biodiversity in forest plantations. Principles of eco-forestry.
9. PRIMARY PRODUCTIVITY.	Production and respiration (biomass, net and gross production). Type of photosynthesis (plants C3, C4 and CAM). Methods to measure primary productivity. Quimiosynthesis. Limiting factors of primary productivity (terrestrial and aquatic communities). Relation Productivity:Biomass in natural ecosystems. The productivity of forest ecosystems (factors that affect forest NPP; NPP of forests and monocultures).
10. FLOW OF ENERGY.	Thermodynamics. Trophic levels. Trophic chains and nets. Ecological pyramids. Diagramas of flow of energy. Storage and dynamic of the energy in ecosystems. Effects of the exploitation of forests in the flow of energy.
11. CYCLES DE MATHER.	Circulation of the mather. Biogeochemical cycles (P, N, S, C, the greenhouse effect). Cycles of elements in forest ecosystems (effect of the age of the trees, of the type of ecosystem, of the type of tree, effects over production, additions and losses of nutrients, effects of the extraction of wood on long-term productivity).
12. THE ECOLOGICAL SUCESSION.	The sucesion (primary/secondary, alogenic/autogenic/biogenic, degradative). Hypothesis on sucesion and the concept of climax. Mechanisms behind sucesion (colonization, alteration of the environment, species displacement). Sucesional models (Horn, Tilman). Changes in the functioning of the ecosystems during the sucesion. Examples of sucesions (abandoned fields, cyclic sucesion). Importance of the sucesion in the exploitation of the forests.
SECTION V. APPLIED ECOLOGY.	Definition. Types of pollutants. The acid rain (effects of the sulphur compounds on plants and animals: the decline of forest ecosystems). The hole in the layer of ozone. Noise. Watter pollution. Bioindicators of water quality. Eutrophication (Causes, recovery of eutrophic lakes).
13. POLLUTION.	
14. EXPLOITATION AND CONTROL OF POPULATIONS.	Concept of maximum sustainable yield. Models of exploitation (fixed quota). Principles about the exploitation of populations (regulation of the effort of exploitation, instability, exploitation of a percentage, dynamic models). The exploitation of the forests. Techniques of pest control (aims, chemical control, biological control, genetic control, integrated control).
15. BASIC PRINCIPLES OF CONSERVATION BIOLOGY.	The number of species that inhabit the planet. The value of the species and ecosystems (intrinsic, instrumental, peculiarity). Processes and causes of extinction (historic extinctions, antropic effects). Management of ecosystems. Social, economic and political factors.
16. INTRODUCCIÓN TO THE ENVIRONMENTAL IMPACT ASESMENT (EIA).	Fundamentalts, terminology and definitions. Objectives of the EIA. Phases of the EIA. Methods and models to define the relation cause-effect.
Practicals in the classroom.	Methods and devices of sampling (devices for air, plants, soil, and water sampling). Methods of mark-recapture (index of Lincoln, method of Jolly). Relative estimates (selective predation, progressive predation, captures by unity of effort).
1. METHODS IN FIELD ECOLOGY: mobile populations.	
Practicals in the classroom.	Quadrats. Transects. Linear interception. Punctual interception. Method of the quadrats centered in a point. Spatial distribution (patterns of distribution). Experiment: sampling of a simulated community of plants.
2. METHODS DE WORK EN ECOLOGY DE FIELD: sessile populations.	
Practicals in the computer room.	Variability of body size in different types of organisms. Concept of allometry. Types of allometry. Examples. Study of problems to determine of the existence of allometry.
3. ECOLOGICAL IMPORTANCE OF BODY SIZE: ALLOMETRY.	
Practicals in the laboratory.	Methods of determination of the age in different type of organisms. Growth of the organisms. Experiment: studio of the growth in different tree species.
4. METHODS DE DETERMINATION OF AGE.	
(*)Práctica de laboratorio.	(*)Utilización do método Winkler para a determinación da actividade fotosintética e respiratoria
5. METABOLISMO MICROBIANO	
Field practicals. 1. Forest pests.	Density of Gonipterus scutellatus on Eucalyptus, and biological control by means of its parasitoid Anaphes nitens.

Field practices. 2. Estimation of water quality in the river Almofrei by means of biological methods. The use of bioindicators to study river water quality.

Planning			
	Class hours	Hours outside the classroom	Total hours
Master Session	30	45	75
Outdoor study / field practices	9.8	14.7	24.5
Laboratory practises	9	13.5	22.5
Classroom work	7	10.5	17.5
Practice in computer rooms	3	4.5	7.5
Short answer tests	2	0	2
Troubleshooting and / or exercises	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
Master Session	Class room lectures.
Outdoor study / field practices	Field work in forest ecosystems
Laboratory practises	Laboratory practical lectures
Classroom work	Class room work
Practice in computer rooms	Simulations of ecological systems in the computer room

Personalized attention	
Methodologies	Description
Master Session	

Assessment			
	Description	Qualification	Evaluated Competences
Master Session	A final written examination will be used to evaluate the work done over the course.	70	CG1 CG6 CG8 CG9 CG10 CG11 CG13 CG16 CE12 CT1 CT6 CT20
Classroom work	(*)Avaliarase no exame escrito da materia	10	CG1 CG6 CG8 CG9 CG10 CG11 CG13 CG16 CE12 CT6

Outdoor study / field practices	(*)Avaliarase no exame escrito da materia	8	CG1 CG6 CG8 CG9 CG10 CG11 CG13 CG16 CE12 CT20
Laboratory practises	(*)Avaliarase no exame escrito da materia	6	CG1 CG6 CG8 CG9 CG10 CG11 CG13 CG16 CE12 CT6
Practice in computer rooms	(*)Avaliarase no exame escrito da materia	6	CG1 CG6 CG8 CG9 CG10 CG11 CG13 CG16 CE12 CT6

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Kimmins, J. P., Forest Ecology, 2, 1997. New Jersey: Prentice-Hall

Sevilla Martínez, F., Una teoría ecológica para los montes Ibéricos, 2008. León: IRMA

Cordero Rivera, A. (editor), Proxecto Galicia: Ecoloxía, vol. 44, 2007. A Coruña: Hércules de ediciones

Terradas, J., Ecología de la Vegetación, 2001. Barcelona: Omega

Molles, M.C., Ecology: concepts and applications, 6 (only until 4th edition available on the Library), 2012. McGraw-Hill

Barnes, B. V., Zak, D. R., Denton, S. R. & Spurr, S. H., Forest Ecology, 4, 1998. New York: John Wiley and Sons

Begon, M., Harper, J. L. & Townsend, C. R., Ecología, 1999. Barcelona: Omega

Rico Boquete, E., Política Forestal e Repoboacións En Galicia. 1941-1971, 1995. Santiago de Compostela: Universidade de Sant

Recommendations

Subjects that continue the syllabus

Management of protected areas and biodiversity/P03G370V01801

Subjects that it is recommended to have taken before

Botany/P03G370V01303

IDENTIFYING DATA**Topography, remote sensing and geographic information systems**

Subject	Topography, remote sensing and geographic information systems			
Code	P03G370V01403			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	9	Mandatory	2nd	2nd
Teaching language				
Department				
Coordinator	Lorenzo Cimadevila, Henrique			
Lecturers	Lorenzo Cimadevila, Henrique			
E-mail	hlorenzo@uvigo.es			
Web	http://faitic.uvigo.es/			
General description	(*)Trátase dunha materia que versa sobre os instrumentos e métodos utilizados para a realización de medición de precisión sobre o terreo e a súa representación a escala. Se abordan tamén as novas metodoloxías de adquisición e xestión de datos espaciais mediante SIX e Teledetección.			

Competencies

Code	Typology
CG5 CG-05: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Dos sistemas de representación.	- know - Know How
CG7 CG-07: Capacidade para identificar os diferentes elementos: elementos físicos.	- know - Know How
CG21 (*)CG-21: Capacidade para medir, inventariar e avaliar os recursos forestais.	- Know How
CG37 CG-37: Capacidade para redactar informes técnicos.	- Know How
CG39 CG-39: Capacidade para redactar valoracións.	- Know How
CG40 CG-40: Capacidade para redactar peritaxes.	- Know How
CG41 CG-41: Capacidade para redactar taxacións.	- Know How
CE16 (*)CE-16: Capacidade para coñecer, comprender e utilizar os principios de: topografía e reformulacións. Sistemas de información xeográfica e teledetección. Programas informáticos de tratamento de datos espaciais.	- know - Know How
CT2 (*)CBI 2: Capacidade de organización e planificación.	- Know How
CT4 (*)CBI 4: Coñecementos básicos de informática.	- know
CT6 (*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7 (*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT8 (*)CBP 1: Capacidades de traballo en equipo, con carácter multidisciplinar e en contextos tanto nacionais como internacionais.	- Know be
CT9 (*)CBP 2: Habilidades nas relacións interpersoais.	- Know be
CT13 (*)CBS 1: Aprendizaxe autónoma.	- Know How
CT16 (*)CBS 4: Liderado.	- Know be

Learning outcomes

Learning outcomes	Competences
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(*)

CG5
CG7
CG21
CG37
CG39
CG40
CG41
CE16
CT2
CT4
CT6
CT7
CT8
CT9
CT13
CT16

New

Contents

Topic

Topography	<ul style="list-style-type: none"> - Introduction to Geodesy and Cartography - Instruments - Methods: radiation, itineraries, intersecting - Stake
Remote sensing	<ul style="list-style-type: none"> - Physical fundamentals - Sensors and Platforms - Digital image processing - Applications
Geographic information systems	<ul style="list-style-type: none"> - SIX concept - Models and Data Structures - Vector GIS - SIG raster - Insert digital terrain modes

Planning

	Class hours	Hours outside the classroom	Total hours
Troubleshooting and / or exercises	25	50	75
Seminars	3	3	6
Master Session	1	1	2
Troubleshooting and / or exercises	3	3	6
Laboratory practises	10	20	30
Practice in computer rooms	16	32	48
Master Session	20	40	60
Short answer tests	1	0	1
Practical tests, real task execution and / or simulated.	3	0	3
Reports / memories of practice	10	0	10

*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	Activity which formulated problem and / or exercises related to the course. The student should develop appropriate solutions or right through the exercise routines, application of formulas or algorithms, application processing procedures available information and interpretation of the results. It is often used to complement the lecture.
Seminars	Activities focused to work on a specific topic, allowing delve or supplement the contents of the field. They can be used to supplement the lectures.
Master Session	Presentation by the teacher of the contents on the subject under study, theoretical and / or guidelines for a job, exercise or project to be developed by the student.

Troubleshooting and / or exercises	Activity which formulated problem and / or exercises related to the course. The student should develop appropriate solutions or right through the exercise routines, application of formulas or algorithms, application processing procedures available information and interpretation of the results. It is often used to complement the lecture.
Laboratory practises	Activities application of knowledge to specific situations and basic skills acquisition and related procedural matter under study. Special spaces are developed with specialized equipment (scientific and technical laboratories, languages, etc.).
Practice in computer rooms	Activities application of knowledge to specific situations, and the acquisition of basic skills and procedural matters related to the object of study, which are held in computer rooms.
Master Session	Presentation by the teacher of the contents on the subject under study, theoretical and / or guidelines for a job, exercise or project to be developed by the student.

Personalized attention	
Methodologies	Description
Master Session	
Troubleshooting and / or exercises	
Seminars	
Laboratory practises	
Tests	
Reports / memories of practice	Description

Assessment			
	Description	Qualification	Evaluated Competences
Master Session	(*)Exame teórico	20	CG5 CG7 CG21 CE16
Troubleshooting and / or exercises	(*)Exame práctico	30	CG5 CG7 CE16 CT2 CT4 CT6 CT13
Short answer tests	(*)Proba tipo test	10	CG5 CG7 CE16
Practical tests, real task execution and / or simulated.	(*)Traballo práctico	40	CG5 CG7 CG21 CG37 CG39 CG40 CG41 CE16 CT2 CT4 CT6 CT7 CT8 CT9 CT13 CT16

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

IDENTIFYING DATA				
Hydraulics				
Subject	Hydraulics			
Code	P03G370V01404			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	9	Mandatory	2nd	2nd
Teaching language				
Department				
Coordinator	Martínez Chamorro, Enrique José			
Lecturers	Martínez Chamorro, Enrique José			
E-mail	enrique.martinez.chamorro@gmail.com			
Web	http://http://webs.uvigo.es/mchamorro/			
General description	<p>(*)1. Hidrostática. Ecuación fundamental de la hidrostática. Centro de presión. Fuerza de presión sobre superficies planas y curvas. Principio de Arquímedes.</p> <p>2. Hidrodinámica. Ecuación de continuidad. Ecuación de Bernouilli generalizada. Potencia de una máquina hidráulica. Ecuación de la cantidad de movimiento en régimen permanente.</p> <p>3. Transporte de agua en conducciones cerradas: tuberías. Pérdidas de carga continuas y singulares. Ecuación de Darcy-Weissbach. Timbraje en tuberías. Tuberías en serie y en paralelo.</p> <p>4. Régimen no estacionario de los líquidos en tuberías. Golpe de ariete. Cálculo de sobrepresiones.</p> <p>5. Diseño hidráulico en tuberías especiales para riego. Cálculo de ramales principales y laterales.</p> <p>6. Elevación e impulsión de líquidos mediante bombas hidráulicas. Curvas características. Elección de bombas.</p> <p>7. El ciclo hidrológico I: precipitación, interceptación y evapotranspiración.</p>			

Competencies		
Code		Typology
CG2	CG-02: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Físicos.	- know - Know How
CG26	CG-26: Coñecementos das seguintes materias necesarios tanto para a xestión dos sistemas forestais como para a súa conservación: hidráulica.	- know
CE9	(*)CE-09: Capacidade para coñecer, comprender e utilizar os principios de: hidráulica forestal; hidroloxía e restauración hidrolóxico-forestal.	- know - Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How

Learning outcomes	
Learning outcomes	Competences
(*)	CG2 CG26 CE9 CT6
New	

Contents	
Topic	
Subject 1	Physical properties of liquids. Concept and properties of hydrostatic pressure. Systems of measurements. Units
Subject 2.	Basic equation of the hydrostatic. Hydrostatic pressure force on flat and curved surfaces. Pressure center. Archimedes' principle
Subject 3.	Design and calculation of dikes in forest hydrology: Forces acting. Conditions of stability. Dimensioning. Design of small dams. Concrete dams and glazed masonry

Subject 4.	Current regimes. Concepts used in the definition of movement. Flow and average speed. Continuity equation. Dynamics of perfect liquids. Equation of the amount of movement in steady state. Equation of Bernoulli. Permanent movement. Graphical representation of the Bernoulli equation. Emptying time of a deposit
Subject 5.	Generalized Bernoulli equation. Loss of load. Power of liquid current in a section. Extension of the Bernoulli equation to permanent real currents. Hydraulic machines: turbines and pumps. Power of a hydraulic machine.
Subject 6.	Measurement of capacity in watercourses: Landfills. Types. Classification. General equation of expenditure. Thin wall dumps. Landfills in thick wall. Flow gauging devices in forest basins.
Subject 7.	Water transport in closed pipes. Reynolds number. Boundary layer Laminar and turbulent regimes in pipes. Continuous load losses. Darcy-Weisbach equation. Coefficient of friction. Diagram of Moody. Monomial exponential empirical formulas. Unique or secondary loss of load. Coefficients k for their estimation. Method of length of equivalent pipe.
Subject 8.	Calculation of pipelines. General conditions. Calculation of a siphon. Timbre in pipes. Simple piping in series, in parallel. Introduction to the calculation of branched pipes.
Subject 9.	Non-stationary regime of liquids in pipes. Water hammer. Description of the phenomenon. Calculation of overpressures. Close quick. Allievi's formula. Slow closing. Michaud's formula. Methods of attenuation.
Subject 10.	Hydraulic design in special pipes for irrigation. Characteristic curves of the emitters. Pipes with discrete flow distribution. Criteria and calculation for the dimensioning of a side of sprinklers. Drip irrigation ditto
Subject 11.	Lifting and discharge of liquids by hydraulic pumps I. Classification of hydraulic pumps. Centrifugal pumps. Geometric and elevation heights of elevation. Characteristic curve. Powers and yields. Loss of energy. Suction height. NPSH Factor. Non-cavitation condition.
Subject 12.	Lifting and flow of liquids using hydraulic pumps II. Characteristic curves of rotodynamic pumps at constant speed. Operating point. Couplings. Formulas of similarity. General characteristics curves at different speeds. Choice of pumps.
Subject 13.	Flow in open channels. Permanent and uniform movement. Vertical velocity distribution. Normal draft. Gradually varied permanent movement. Specific energy. Depth, speed and specific energy critical. Hydraulic overhang.
Subject 14.	Hydrological cycle. Forest action on water regulation. Physical parameters of the hydrological basin. Soil and climate. Forest action on water regulation. Hydric balance. Criteria for restoring forest hydrological degraded areas.

Planning

	Class hours	Hours outside the classroom	Total hours
Troubleshooting and / or exercises	30	45	75
Laboratory practises	10	10	20
Autonomous troubleshooting and / or exercises	0	60	60
Master Session	20	20	40
Troubleshooting and / or exercises	4	26	30

*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	Activity which formulated problem and / or exercises related to the course. The student should develop appropriate solutions or right through the exercise routines, application of formulas or algorithms, application processing procedures available information and interpretation of the results. It is often used to complement the lecture.
Laboratory practises	Activities application of knowledge to specific situations and basic skills acquisition and related procedural matter under study. Special spaces are developed with specialized equipment (scientific and technical laboratories, languages, etc.).

Autonomous exercises	Actividade in which problems are formulated and / or exercises related to the course. The student must develop the analysis and resolution of problems and / or exercises independently.
Master Session	Presentation by the teacher of the contents on the subject under study, theoretical and / or guidelines for a job, exercise or project to be developed by the student.

Personalized attention

Methodologies	Description
Autonomous troubleshooting and / or exercises	
Troubleshooting and / or exercises	

Assessment

	Description	Qualification Evaluated	Competences
Autonomous troubleshooting and / or exercises	(*)Planteamiento de problemas que el alumno debe resolver de forma personalizada fuera de clase a lo largo del curso	30	CG2 CG26 CE9 CT6
Troubleshooting and / or exercises	(*)Planteamiento de problemas que el alumno debe resolver en clase en el acto de evaluación	70	CG2 CG26 CE9 CT6

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

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- AGÜERA SORIANO, J., Mecánica de fluidos incompresibles y turbomáquinas hidráulicas, Ciencia, 1992
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- SUAREZ, J. MARTINEZ, F., PUERTAS, J., Manual de conducciones Uralita, Thomsosn Paraninfo, 2005
- FUENTES YAGUE, Técnicas de riego, IRYDA., 1992
- RODRIGO, J. y CORDERO ,L, Riego localizado, Mundi prensa, 2003
- DAL -RE, R., Pequeños embalses de uso agrícola, Mundi prensa, 2003
- AMIGO, E., y AGUILAR, E., Manual para el diseño construcción y explotación de embalses impermeabilizados con geomembranas, Gobierno de Canarias, 1994
- LLAMAS, J., Hidrología General, Servicio editorial. Univ. Pais Vasco, 1993
- LOPEZ CADENAS, F., Restauración hidrológico-forestal de cuencas y control, Tragsa-Tragsatec/M^º. Medio Ambiente/ Mundi-Prensa, 1998
- LOPEZ CADENAS, F. y MINTEGUI J.A., Hidrología de superficie, E.T.S.I.M. Madrid, 1986

Recommendations

Subjects that it is recommended to have taken before

- Physics: Physics I/P03G370V01102
- Physics: Physics II/P03G370V01202
- Mathematics: Overview of mathematics/P03G370V01203

IDENTIFYING DATA**Forest constructions**

Subject	Forest constructions			
Code	P03G370V01501			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	3rd	1st
Teaching language				
Department				
Coordinator	Riveiro Rodríguez, Belén			
Lecturers	Riveiro Rodríguez, Belén			
E-mail	belenriveiro@uvigo.es			
Web	http://http://faitic.uvigo.es/index.php/es/			
General description	(*)Principios, Coñecementos e Normas nos que se fundamentan as Construcións Forestais e o deseño de Vías Forestais			

Competencies

Code		Typology
CG27	CG-27: Coñecementos das seguintes materias necesarios tanto para a xestión dos sistemas forestais como para a súa conservación: construción.	- know
CG29	CG-29: Coñecementos das seguintes materias necesarios tanto para a xestión dos sistemas forestais como para a súa conservación: camiños forestais.	- know
CE18	(*)CE-18: Capacidade para coñecer, comprender e utilizar os principios de: construcións forestais e vías forestais.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- Know How
CT3	(*)CBI 3: Capacidade de comunicación oral e escrita tanto na lingua vernácula como en linguas estranxeiras.	- know - Know How
CT4	(*)CBI 4: Coñecementos básicos de informática.	- know
CT5	(*)CBI 5: Capacidade de xestión da información.	- Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT8	(*)CBP 1: Capacidades de traballo en equipo, con carácter multidisciplinar e en contextos tanto nacionais como internacionais.	- Know be
CT9	(*)CBP 2: Habilidades nas relacións interpersoais.	- Know be
CT10	(*)CBP 3: Recoñecer a diversidade e a multiculturalidade.	- Know be
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- Know How
CT12	(*)CBP 5: Desenvolver un compromiso ético, que implique o respecto dos dereitos fundamentais e de igualdade entre homes e mulleres, e dos principios de igualdade de oportunidades, accesibilidade universal a persoas con discapacidade e educación para a paz.	- Know be
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How
CT14	(*)CBS 2: Adaptación a novas situacións.	- Know be
CT15	(*)CBS 3: Creatividade.	- Know be
CT16	(*)CBS 4: Liderado.	- Know be
CT17	(*)CBS 5: Coñecemento doutras culturas e costumes.	- know - Know be
CT18	(*)CBS 6: Iniciativa e espírito emprendedor.	- Know be
CT19	(*)CBS 7: Motivación pola calidade.	- Know be
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
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(*)CE-18: Capacidad para conocer, comprender y utilizar los principios en los que se fundamentan las Construcciones forestales y Vías forestales.

CG27
CG29
CE18
CT1
CT2
CT3
CT4
CT5
CT6
CT7
CT8
CT9
CT10
CT11
CT12
CT13
CT14
CT15
CT16
CT17
CT18
CT19
CT20

New

Contents

Topic

1.- Previous concepts of mechanics and principles of materials resistance.	1.- Moment of a force, Balance of a body, Diagram of the Free Body, Reactions, Unions and supports. 2.- Centers of gravity, centroid, first-order static moment, moment of inertia, spinning radius. 3.- Forces distributed 4.- Curtains 5.- General principles and definitions of the Resistance of Materials.
2.- The elastic solid	1.- Tension state of a point, intrinsic components of tension, stress matrix, stresses, strain matrix. 2.- Diagrams of solicitations. 3.- Introduction to Hyperelasticity, degree of hyperstability, Compatibility Equations of Deformations.
3.- Axial Efforts. Traction-Compression	1.- Traction test of ductile materials. 2.- The elastic regime. Young's Modulus, Poisson's Coefficient. 3.- Uniaxial tensile strain. 4.- Hyperelasticity in bars subjected to axial stress.
4.- Introduction to the Cut	1.- Cutting voltage, angular distortion, Rigidity module. 2.- Joints: screws and rivets. 3.- Types of failure in joints by shear stress.
5.- Introduction to Twisting	1.- Elementary theory of torsion in prisms of circular section. 2.- Tension and strain analysis, turning angle.
6.- Introduction to Flexion	1. Beams: definition and classes. Applied forces 2.- Cutting force and bending moment 3.- Relations between shear, bending and load 4.- Cutting and bending diagrams 5.- Types of flexion. Hypothesis and limitations 6.- Normal stresses. Law of Navier 7.- Concept of resistant module 8.- Bending deformations: Differential Equation of the Elastic, Theorems of Mohr. 9.- Hyperelastic Flexing
7- Introduction to Buckling	1.- Buckling instability. 2. Euler's critical load. 3.- Limit of application of the formula of Euler, mechanical slenderness, efficient sections.

8.- Introduction to the analysis of structures	1.- Reticulated structures. 2.- Porticos, semipórticos and pictures. 3.- Initiation to the matrix calculation. 4.- Limit States. 5.- Degrees of Freedom.
9.- Constructive elements: metallic, cement, concrete, wood.	1.- Foundations. Land. 2.- Cement and Concrete. 3.- Industrial Warehouses.
10.- Obligatory standards in construction.	1.- Standards obliged to comply. Building Technical Code. 2.- Eurocode.
11.- Forest roads	1.- Land analysis and soil improvement. 2.- Planning of Roads
12.- Construction Projects	1.- Calculation Systems and Budget. 2.- Systems of contracting and control of works. Pert, Gant. 3.- Quality control of buildings. 4.- Prevention Plan. 5.- Principles of Maintenance.

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	1	2
Master Session	21	42	63
Troubleshooting and / or exercises	11	22	33
Practice in computer rooms	9	27	36
Jobs and projects	1	8	9
Multiple choice tests	1	2	3
Long answer tests and development	2	2	4

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

Methodologies

	Description
Introductory activities	Efforts to make contact and gather information about the students, and to present the subject.
Master Session	Presentation by the teacher of the contents on the subject under study, theoretical and / or guidelines for a job, exercise or project to be developed by the student.
Troubleshooting and / or exercises	Activity which formulated problem and / or exercises related to the course. The student should develop appropriate solutions or right through the exercise routines, application of formulas or algorithms, application processing procedures available information and interpretation of the results. It is often used to complement the lecture.
Practice in computer rooms	Activities application of knowledge to specific situations, and the acquisition of basic skills and procedural matters related to the object of study, which are held in computer rooms.

Personalized attention

Methodologies	Description
Troubleshooting and / or exercises	The students will come to the teachers to clarify the concepts necessary to perform the problems and / or exercises performed in the classroom, as well as to clarify / discuss any doubts that may appear after the end of the sessions.
Tests	Description
Jobs and projects	Students will be able to use face-to-face tutoring, or teledocence tools for correct tutoring by teachers in terms of carrying out work / projects.

Assessment

	Description	Qualification	Evaluated Competences
Jobs and projects	(*)Ao longo do curso realizaranse traballos ou pequenos proxectos nos que se abordarán exercicios e casos de estudo que complementen as sesións prácticas.	15	CE18
Multiple choice tests	(*)Realizaranse dúas probas ao longo do curso para fixar os coñecementos adquiridos	10	CE18

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

M. Vázquez, RESISTENCIA DE MATERIALES, 4, Noela

P. Jiménez Montoya, HORMIGÓN ARMADO, 1, Gustavo Gili

Rafael Dal-Ré Tenreiro, • CAMINOS RURALES. PROYECTO Y CONSTRUCCIÓN, 1, Mundi-Prensa

MINISTERIO DE FOMENTO, CODIGO TECNICO DE EDIFICACION, 1, B.O.E.

Ferdinand P. Beer, MECÁNICA DE MATERIALES, 1, Mc. Graw Hill

Recommendations

Subjects that continue the syllabus

Hydraulics/P03G370V01404

Forest exploitation/P03G370V01601

Environmental Impact/P03G370V01504

Forest Fires/P03G370V01802

Primary wood processing industries/P03G370V01706

Subjects that are recommended to be taken simultaneously

Forest certification and legislation/P03G370V01505

Forestry machinery/P03G370V01502

Projects/P03G370V01503

Subjects that it is recommended to have taken before

Graphic expression: Graphic expression and cartography/P03G370V01101

Physics: Physics II/P03G370V01202

Mathematics: Overview of mathematics/P03G370V01203

Mathematics: Mathematics and IT/P03G370V01103

Chemistry: Chemistry/P03G370V01204

IDENTIFYING DATA**Forestry machinery**

Subject	Forestry machinery			
Code	P03G370V01502			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	3rd	1st
Teaching language				
Department				
Coordinator	Diz Montero, Rubén			
Lecturers	Diz Montero, Rubén			
E-mail	rubendiz@uvigo.es			
Web				
General description	In this **asignatura pretends that he student *purchase *the *essential *knowledges that reads allow to comprise he *operation of woools machines *employed in woools forest *industries, that *know **the types of machines and *installations *more important *and *his *components. *His *knowledge results basic for him *analysis of him *operation, *design *and *construction of woools machines *and of *the teams associated the same *woools, *and in *general woools *industrial *applications in that they are used.			

Competencies

Code		Typology
CG2	CG-02: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Físicos.	- know - Know How
CG30	CG-30: Coñecementos das seguintes materias necesarios tanto para a xestión dos sistemas forestais como para a súa conservación: maquinaria e mecanización.	- know
CE20	(*)CE-20: Capacidade para coñecer, comprender e utilizar os principios de: maquinaria e mecanización forestais.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT5	(*)CBI 5: Capacidade de xestión da información.	- Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How

Learning outcomes

Learning outcomes	Competences
	CG2 CG30 CE20 CT1 CT5 CT13

Lana relation between competitions *and results, *and he weight of each competition inside wool matter show * in him *pdf *attach.
http://forestales.uvigo.es/sites/default/files/19%20%20Machinery.*Pdf#***overlay-***context=are**content/competitions-*and-resulted-of-*learning-by-matter

Contents

Topic	
1. Thermal machines. Generalities	Classification, theoretical appearances and principles of operation. Types of engines employed in forest machines.
2. Study of Thermal Engines	Engines of lit caused. Engines of lit by compression.
3. Study of compressors	Types of compressors. Installations of compression of air and pneumatic circuit.
4. Machinery used in forestry explotatrions.	Types of machines. Hydraulic circuits. Bombs and hydraulic engines
5. Machinery used in forestry industries	Installations and circuits

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	29	86	115
Presentations / exhibitions	2	10	12
Laboratory practises	14	6	20
Multiple choice tests	1	0	1
Troubleshooting and / or exercises	2	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
Master Session	Exhibition by part of the professor of the contents of the matter object of study. Resolution of problems and/or exercises related with the *asignatura
Presentations / exhibitions	Realisation of works in groups on thematic specific and presentation of the same in the classroom
Laboratory practises	Work with real machines in the laboratory to complement the contents of the matter, completed with some practice with specific software. Preparation of memories of practices.

Personalized attention

Methodologies	Description
Master Session	
Laboratory practises	
Presentations / exhibitions	

Assessment

	Description	Qualification Evaluated	Competences
Master Session	Participation in the class. Proposal of **cuestions of theory justified on the content given.	0	CG2 CG30 CE20
Laboratory practises	Realisation of practices of laboratory and delivery of memories on the same.	20	CG2 CE20 CT1 CT5 CT13
Presentations / exhibitions	Realisation of works on the content of the **asignatura. Exhibition in the classroom.	20	CG2 CG30 CE20 CT1 CT5 CT13
Multiple choice tests	Resolution of questionnaire of theory type test.	25	CG2 CG30 CE20 CT1 CT5
Troubleshooting and / or exercises	Resolution of problems and/or exercises related with the *temario of the **asignatura.	35	CG2 CG30 CE20 CT1 CT5

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

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Çengel Y. y Boles M., Termodinámica, 7ª edición (2011), McGraw-Hill

Payri F. y Desantes J.M., Motores de combustión interna alternativos, 2011, Ed. Reverté

Agüera Soriano J., Termodinámica Lógica y Motores Térmicos, 1993, Ed. Ciencia 3

Creus Solé A., Neumática e Hidráulica, 2010, Marcombo

IDAE, Biomasa : maquinaria agrícola y forestal, 2007, IDAE

Recommendations

Subjects that continue the syllabus

Primary wood processing industries/P03G370V01706

Product development and innovation in the wood industry/P03G370V01708

Subjects that it is recommended to have taken before

Physics: Physics I/P03G370V01102

Physics: Physics II/P03G370V01202

Mathematics: Mathematics and IT/P03G370V01103

Hydraulics/P03G370V01404

IDENTIFYING DATA**Projects**

Subject	Projects			
Code	P03G370V01503			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	3rd	1st
Teaching language				
Department				
Coordinator	Valero Gutiérrez del Olmo, Enrique María			
Lecturers	Picos Martín, Juan Valero Gutiérrez del Olmo, Enrique María			
E-mail	evalero@uvigo.es			
Web	http://http://faitic.uvigo.es/index.php/es/			
General description	(*)Esta materia é de carácter eminentemente aplicado e co obxectivo de que os alumnos adquiran os coñecementos básicos mediante a aprendizaxe dos conceptos, terminoloxía, teoría, e metodoloxía necesarios para ser capaz de entender, formular e resolver un proxecto.			

Competencies

Code	Typology
CG35 CG-35: Capacidade para deseñar, dirixir, elaborar, implantar e interpretar proxectos.	- know - Know How
CG36 CG-36: Capacidade para deseñar, dirixir, elaborar, implantar e interpretar plans.	- know - Know How
CG37 CG-37: Capacidade para redactar informes técnicos.	- Know How
CG38 CG-38: Capacidade para redactar memorias de recoñecemento.	- Know How
CG39 CG-39: Capacidade para redactar valoracións.	- Know How
CG40 CG-40: Capacidade para redactar peritaxes.	- Know How
CG41 CG-41: Capacidade para redactar taxacións.	- Know How
CG42 CG-42: Capacidade para entender, interpretar e adoptar os avances científicos no campo forestal, para desenvolver e transferir tecnoloxía e para traballar nun medio multilingüe e multidisciplinar.	- know - Know How
CT1 (*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2 (*)CBI 2: Capacidade de organización e planificación.	- Know How
CT3 (*)CBI 3: Capacidade de comunicación oral e escrita tanto na lingua vernácula como en linguas estranxeiras.	- know - Know How
CT5 (*)CBI 5: Capacidade de xestión da información.	- Know How
CT6 (*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7 (*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT8 (*)CBP 1: Capacidades de traballo en equipo, con carácter multidisciplinar e en contextos tanto nacionais como internacionais.	- Know be
CT9 (*)CBP 2: Habilidades nas relacións interpersoais.	- Know be
CT11 (*)CBP 4: Habilidades de razoamento crítico.	- Know How
CT13 (*)CBS 1: Aprendizaxe autónoma.	- Know How
CT14 (*)CBS 2: Adaptación a novas situacións.	- Know be
CT15 (*)CBS 3: Creatividade.	- Know be
CT16 (*)CBS 4: Liderado.	- Know be
CT20 (*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
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(*)

CG35
CG36
CG37
CG38
CG39
CG40
CG41
CG42
CT1
CT2
CT3
CT5
CT6
CT7
CT8
CT9
CT11
CT13
CT14
CT15
CT16
CT20

New

Contents

Topic

Theme I. The project as a concept	- Definition and philosophy of the project - The project cycle
Theme II. The project as a method. Project engineering	- Project methodology. Reliability study - Preliminary project or preliminary project -Project detailed -Project planning - Socio-economic evaluation of projects -Evaluation of projects -Analysis of risk in the evaluation of projects.
Theme III. The project as document	- Content of project documents -Memory -Blueprints -Posts of conditions -Budget
Theme IV. The professional activity and the project	- The contracting of technical assistance for the drafting of projects. -The contest of projects and execution of works -The activity of project engineer -The rates of fees.
Theme V. Forestry projects	-The forest projects - Industrial projects of 1st transformation -Projects of management of forest masses -Projects of forest infrastructure in the forest - Hunting projects -Fishing projects. -Projects for recreation and public use -Projects for the management of protected areas.

Planning

	Class hours	Hours outside the classroom	Total hours
Presentations / exhibitions	75	0	75
Projects	38	0	38
Forum Index	12	0	12
Proceedings	13	0	13
Laboratory practises	12	0	12
Multiple choice tests	2	0	2
Jobs and projects	0	10	10

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

Methodologies	
	Description
Presentations / exhibitions	Exhibition by the students to the teacher and / or a group of students of a subject matter or content of the results of a job, exercise, project ... It can be done individually or in groups.
Projects	Performing activities that allow the cooperation of various subjects and students face, working together, to open problems. Allow coaching, among others, the cooperative learning skills, leadership, organizational, communication and strengthening relationships.
Forum Index	Activity within a virtual environment in which they discussed various topics related to the academic and / or professional.
Proceedings	Open discussion between a group of students. You can focus on a topic of subject content, the analysis of a case, the outcome of a project, exercise or problem previously developed a keynote address ...
Laboratory practises	Activities application of knowledge to specific situations and basic skills acquisition and related procedural matter under study. Special spaces are developed with specialized equipment (scientific and technical laboratories, languages, etc.).

Personalized attention	
Methodologies	Description
Presentations / exhibitions	
Laboratory practises	
Projects	
Forum Index	
Proceedings	

Assessment			
	Description	Qualification Evaluated	Competences
Presentations / exhibitions	(*)Exames finais, ou por escrito de tipo redacción ou desenvolvemento dun ou varios temas, ou ben de tipo test, ou combinados ou ben, no seu caso exames orais.	40	CT1 CT3 CT11 CT13
Projects	(*)Realización dun anteproxecto técnico de carácter semi-profesional.	40	CG35 CG36 CG37 CG38 CG39 CG40 CG41 CG42 CT2 CT3 CT6 CT7 CT8 CT9 CT13 CT14 CT15 CT16 CT20
Multiple choice tests		0	

Jobs and projects	(*)Avaliación continua do alumno a través da súa asistencia e participación, tanto nas clases coma en debates e foros de discusión.	20	CT3 CT6 CT7 CT8 CT13 CT14 CT15
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Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

- BERGILLOS MADRID, J.M, Metodología de diseño de proyectos, 1989., Dpto. de Ingeniería Rural. Universidad de Córdoba
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- GÓMEZ SENENT, E., Las fases del proyecto y su metodología., 1992, Universidad Politécnica de Valencia
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- TRUEBA, Y., A. CAZORLA y J.J. DE GRACIA, Proyectos empresariales. Formulación y Evaluación, 1995, Ed. Mundi-Prensa, Madrid
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- SAPAG CHAIN, N, Fundamentos de Preparación y Evaluación de Proyectos, 2005, Ed. McGraw-Hill. Bogotá
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Recommendations

Subjects that are recommended to be taken simultaneously

- Forest exploitation/P03G370V01601
- Forest constructions/P03G370V01501
- Environmental management/P03G370V01608
- Forestry hydrology/P03G370V01604
- Forest management/P03G370V01605
- Repopulation/P03G370V01603

Subjects that it is recommended to have taken before

- Physics: Physics I/P03G370V01102
- Physics: Physics II/P03G370V01202
- Mathematics: Overview of mathematics/P03G370V01203
- Mathematics: Mathematics and IT/P03G370V01103
- Botany/P03G370V01303
- Electrotechnology and rural electrification/P03G370V01304

IDENTIFYING DATA**Environmental Impact**

Subject	Environmental Impact			
Code	P03G370V01504			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	3rd	1st
Teaching language				
Department				
Coordinator	Fernández Alonso, José María			
Lecturers	Fernández Alonso, José María			
E-mail	txema182@gmail.com			
Web				
General description	(*)En esta materia se trata de compatibilizar la actividad humana con el medio ambiente de tal manera que se puedan prever y prevenir los impactos que sobre los diversos factores del medio provocan determinadas actuaciones y/o actividades, tratando de minimizarlos o reducirlos.			

Competencies

Code		Typology
CB1	(*)Que os estudantes posúan e comprendan coñecementos que aporten unha base ou oportunidade de ser orixinal no desenvolvemento e / ou aplicación de ideas, a miúdo nun contexto de investigación	- know - Know How
CB2	Que los estudiantes sepan aplicar conocimientos adquiridos y su capacidad de resolución de problemas en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio	- know - Know How
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG7	CG-07: Capacidade para identificar os diferentes elementos: elementos físicos.	- know - Know How
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG9	CG-09: Capacidade para analizar a estrutura e función ecolóxica dos sistemas e recursos forestais, incluíndo as paisaxes.	- know - Know How
CG13	CG-13: Coñecemento dos procesos de degradación que afecten aos sistemas e recursos forestais en xeral.	- know - Know How
CG14	CG-14: Capacidade para o uso das técnicas de protección do medio forestal.	- know - Know How
CG17	CG-17: Capacidade para avaliar e corrixir o impacto ambiental.	- know - Know How
CG18	CG-18: Capacidade para aplicar as técnicas de auditoría.	- know - Know How
CG19	CG-19: Capacidade para aplicar as técnicas de xestión ambiental.	- know - Know How
CE19	(*)CE-19: Capacidade para coñecer, comprender e utilizar os principios de: avaliación e corrección do impacto ambiental; recuperación de espazos degradados.	- know - Know How - Know be
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- know - Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- know - Know How
CT14	(*)CBS 2: Adaptación a novas situacións.	- know - Know How
CT15	(*)CBS 3: Creatividade.	- know - Know How

Learning outcomes	
Learning outcomes	Competences
(*)CE-19: Capacidad para conocer, comprender y utilizar los principios de: evaluación y corrección del impacto ambiental; recuperación de espacios degradados.	CB1 CB2 CG6
CE-19.1.- Aprender y conocer los conceptos básicos sobre el medio ambiente y la gestión del mismo.	CG7 CG8
CE-19.2.- Conocer el desarrollo de las políticas ambientales en el mundo y en el seno de la Unión Europea y el desarrollo de las actuaciones desde el sector público en materia de Medio Ambiente.	CG9 CG13 CG14
CE-19.3.- Conocer la legislación ambiental vigente a nivel global, nacional, regional.	CG17 CG18
CE-19.4.- Conocer los factores ambientales y las bases del Desarrollo Sostenible.	CG19 CE19
CE-19.5.- Conocer y aprender a utilizar los indicadores de impacto.	CT1 CT2
CE-19.6.- Conocer la tipología de los impactos ambientales y su clasificación y características.	CT11 CT14
CE-19.7.- Conocer el procedimiento administrativo de evaluación de impacto ambiental y los diferentes tipos de evaluación en diferentes etapas.	CT15 CT20
CE-19.8.- Conocer la importancia de los planes generales y globales y la implicación medioambiental de las políticas sectoriales.	
CE-19.9.- Conocer el proceso de evaluación ambiental estratégica.	
CE-19.10.- Conocer los apartados que debe contener un estudio de impacto ambiental y los pasos para realizarlo.	
CE-19.11.- Aprender a identificar las acciones de un proyecto o acción que pueden provocar impactos.	
CE-19.12.- Aprender a realizar el inventario ambiental y a identificar los factores susceptibles de sufrir impactos.	
CE-19.13.- Aprender a identificar los impactos ambientales de una acción, obra, proyecto, plan, etc.	
CE-19.14.- Conocer y aplicar los distintos métodos y sistemas de valoración de impactos: cualitativos y cuantitativos. Conocer en profundidad algunos de los más utilizados: Graficos, guias, etc. Aplicación de alguno de los más utilizados: matriz de Leopold, sistema de Battelle-Columbus, etc.	
CE-19.15.- Conocer las medidas correctoras y protectoras que se deben o pueden aplicar según la gravedad de los impactos.	
CE-19.16.- Conocer el contenido y funcionamiento de las planes de vigilancia ambiental y la metodología de elaboración.	
CE-19.17.- Conocer el objetivo y la metodología de realización de las auditorías medioambientales.	
CE-19.18.- Conocer y aprender las técnicas, tratamientos y obras de recuperación de espacios degradados de especiales características: vertederos, canteras, etc.	
CE-19.19.- Conocer y aprender técnicas de plantación y revegetación en espacios degradados de difícil recuperación: Hidrosiembra, etc.	

New

Contents	
Topic	
Subject 1.	Concepts and concepts: Environment and environmental management.
Subject 2.	History and environmental regulations in Europe. Environmental action plans of the European Union.
Subject 3.	Environmental management in the public sector. Environmental Plans. Global plans. Sectoral plans.

Subject 4.	Environmental legislation: In the European Union, in Spain, in the Autonomous Communities.
Subject 5.	Environment and Natural environment. Environmental factors. Actions and activities that produce impacts.
Subject 6.	Sustainable development. Renewal rate, assimilation capacity and host capacity.
Subject 7.	Impact of a project or activity. Impact on the different phases of the project.
Subject 8.	Indicators of impact. Biological indicators.
Subject 9.	Typology of impacts. Cataloging and classification of environmental impacts.
Subject 10.	Types of environmental impact assessment.
Subject 11.	EIA process. Administrative process and content of the EIA. Declaration of Environmental Impact.
Subject 12.	Environmental impact studies: content and process.
Subject 13.	Studies of project actions that can cause impacts.
Subject 14.	Environmental inventory and factors susceptible of affection.
Subject 15.	Identification and assessment of impacts. Techniques and methods.
Subject 16.	Qualitative methods and quantitative methods.
Subject 17.	Corrective and protective measures. Environmental monitoring plans. Environmental control plans.
Subject 18.	Eco audits and environmental audits.
Subject 19.	Degraded areas: landfills, tailings, slopes, mines, etc. Recovery work.
Subject 20.	Civil works for the regeneration and environmental actions and of restoration and recovery.
Subject 21.	Revegetation and planting.
Subject 22.	Hidrosiembra

Planning

	Class hours	Hours outside the classroom	Total hours
Tutored works	37	0	37
Laboratory practises	20	0	20
Case studies / analysis of situations	30	0	30
Classroom work	60	0	60
Multiple choice tests	1	0	1
Jobs and projects	1	0	1
Reports / memories of practice	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
Tutored works	The student, individually or in groups, prepares a paper on the subject of matter or prepare seminars, research, memoirs, essays, summaries of readings, lectures, etc.. Generally it is an autonomous activity / of the student / s that includes finding and collecting information, reading and literature management, writing ...
Laboratory practises	Activities application of knowledge to specific situations and basic skills acquisition and related procedural matter under study. Special spaces are developed with specialized equipment (scientific and technical laboratories, languages, etc.).
Case studies / analysis of situations	Analysis of an event, issue or actual event in order to know, interpret, solve, generate hypotheses, comparing data, reflect, complete knowledge, diagnose and training in alternative dispute resolution procedures.
Classroom work	Students develop exercises or classroom projects under the guidance and supervision of the teacher. May link autonomous development of student activities.

Personalized attention

Methodologies	Description
Classroom work	

Tutored works	
Laboratory practises	
Case studies / analysis of situations	
Tests	Description
Multiple choice tests	
Jobs and projects	
Reports / memories of practice	

Assessment			
	Description	Qualification	Evaluated Competences
Classroom work	(*)Se valora la asistencia y participación con seguimiento individual de los alumnos Se evalúan las competencias básicas CB1 y CB2, las generales CG6, CG7, CG8, CG9, CG13, CG14, CG17, CG18 y CG19, la específica CE19 (CE 19.1 a 19.19) y las transversales CT1, CT2, CT11, CT14, CT15 y CT20	10	CB1 CB2 CG6 CG7 CG8 CG9 CG14 CG17 CG18 CG19 CE19 CT14 CT15 CT20
Tutored works	(*)Se valora por parte del profesor la dedicación del alumno, el interés y el desarrollo de los trabajos, su valoración se realiza en la evaluación final del estudio de casos presentado Se evalúan las competencias básicas CB1 y CB2, las generales CG6, CG7, CG8, CG9, CG13, CG14, CG17, CG18 y CG19, la específica CE19 (CE 19.1 a 19.19) y las transversales CT1, CT2, CT11, CT14, CT15 y CT20	0	
Laboratory practises	(*)Se valora la asistencia y participación de forma conjunta con los trabajos de aula Se evalúan las competencias básicas CB1 y CB2, las generales CG6, CG7, CG8, CG9, CG13, CG14, CG17, CG18 y CG19, la específica CE19 (CE 19.1 a 19.19) y las transversales CT1, CT2, CT11, CT14, CT15 y CT20	0	
Case studies / analysis of situations	(*)El trabajo es valorado y evaluado por los propios compañeros tras la presentación del mismo y por el profesor quien tendrá en consideración todos los factores señalados en el apartado de trabajos tutelados Se evalúan las competencias básicas CB1 y CB2, las generales CG6, CG7, CG8, CG9, CG13, CG14, CG17, CG18 y CG19, la específica CE19 (CE 19.1 a 19.19) y las transversales CT1, CT2, CT11, CT14, CT15 y CT20	20	CB1 CB2 CG8 CG9 CG13 CG14 CG17 CG18 CG19 CT1 CT2 CT11 CT14 CT15

Multiple choice tests	(*)Se realiza una prueba tipo test al final de la asignatura a modo de examen final sobre los contenido del temario que se han desarrollado en el curso y sobre las materias de las visitas y prácticas Se evalúan las competencias básicas CB1 y CB2, las generales CG6, CG7, CG8, CG9, CG13, CG14, CG17, CG18 y CG19, la específica CE19 (CE 19.1 a 19.19) y las transversales CT1, CT2, CT11, CT14, CT15 y CT20	50	CB1 CB2 CG6 CG7 CG8 CG9 CG13 CG14 CE19
Jobs and projects	(*)El trabajo presentado deberá tener una parte importante de contenido técnico y se valorará su innovación en cuanto a temática y desarrollo, Su evaluación será incluida en el estudio de casos. La valoración adicional será consecuencia de la obtención de los objetivos planteados inicialmente Se evalúan las competencias básicas CB1 y CB2, las generales CG6, CG7, CG8, CG9, CG13, CG14, CG17, CG18 y CG19, la específica CE19 (CE 19.1 a 19.19) y las transversales CT1, CT2, CT11, CT14, CT15 y CT20	10	CB1 CB2 CG14 CG17 CG18 CG19 CE19 CT1 CT2 CT11 CT15 CT20
Reports / memories of practice	(*)El alumno presentará un informe sobre las cuestiones que suscitaron debate en las prácticas con la solución aportada por ellos para cada uno de los casos Se evalúan las competencias básicas CB1 y CB2, las generales CG6, CG7, CG8, CG9, CG13, CG14, CG17, CG18 y CG19, la específica CE19 (CE 19.1 a 19.19) y las transversales CT1, CT2, CT11, CT14, CT15 y CT20	10	CB1 CB2 CG14 CG17 CG18 CG19 CE19 CT1 CT2 CT11 CT15

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

IDENTIFYING DATA**Forest certification and legislation**

Subject	Forest certification and legislation			
Code	P03G370V01505			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	3rd	1st
Teaching language				
Department				
Coordinator				
Lecturers				
E-mail				
Web	http://www.faitic.uvigo.es			
General description	(*)Los futuros técnicos forestales deben conocer la legislación que les afecta y para ello deben conocer desde el inicio los procesos de tramitación y los Organismos que legislan y ejecutan las leyes.			

Competencies

Code		Typology
CB1	(*)Que os estudantes posúan e comprendan coñecementos que aporten unha base ou oportunidade de ser orixinal no desenvolvemento e / ou aplicación de ideas, a miúdo nun contexto de investigación	- know - Know How - Know be
CB2	Que los estudiantes sepan aplicar conocimientos adquiridos y su capacidad de resolución de problemas en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio	- know - Know How
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How - Know be
CG9	CG-09: Capacidade para analizar a estrutura e función ecolóxica dos sistemas e recursos forestais, incluíndo as paisaxes.	- know - Know How - Know be
CG31	CG-31: Capacidade para aplicar as técnicas de ordenación forestal e planificación do territorio, así como os criterios e indicadores da xestión forestal sostible no marco dos procedementos de certificación forestal.	- know - Know How
CE25	(*)CE-25: Capacidade para coñecer, comprender e utilizar os principios de: lexislación e certificación forestal; socioloxía e política forestal.	- know - Know How - Know be
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- know - Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- know - Know How - Know be
CT14	(*)CBS 2: Adaptación a novas situacións.	- know - Know How - Know be
CT15	(*)CBS 3: Creatividade.	- know - Know How - Know be
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- know - Know How - Know be

Learning outcomes

Learning outcomes	Competences
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(*)CE-25: Capacidad para conocer, comprender y utilizar los principios de: Legislación y certificación forestal; Sociología y Política forestal.	CB1 CB2 CG8 CG9 CG31
CE-25.1.- Introducir a los alumnos en conceptos jurídicos básicos	CE25
CE-25.2.- Formar al alumno en la terminología jurídica	CT1
CE-25.3.- Instruir al alumno en conocimiento práctico del derecho	CT2
CE-25.4.- Conocer el marco jurídico comunitario, español y autonómico	CT11
CE-25.5.- Conocer la estructura y funcionamiento de las instituciones autonómicas, nacionales y europeas.	CT14
CE-25.6.- Conocer las formas de contratación y los tipos de contratos de acuerdo con la Ley de procedimiento administrativo y la ley de contratos del Estado	CT15
CE-25.7.- Conocer y manejar la normativa básica en materia de la propiedad forestal	CT20
CE-25.8.- Conocer la legislación vigente en materia de montes a nivel comunitario y estatal.	
CE-25.9.- Conocer la legislación autonómica vigente en materia de montes.	
CE-25.10.- Conocer la estructura, funcionamiento y la legislación especial de los Montes Vecinales en Mano Común.	
CE-25.11.- Conocer y manejar otra legislación que afecta a la actividad forestal y medioambiental.	
CE-25.12.- Conocer los procesos mundiales y las iniciativas desarrolladas en torno a los bosques.	
CE-25.13.- Conocer los acuerdos europeos que España ha firmado relativos a la protección de los bosques en Europa.	
CE-25.14.- Conocer los procesos mundiales para lograr la Gestión Forestal Sostenible.	
CE-25.15.- Conocer los principios mundiales y europeos de la certificación forestal.	
CE-25.16.- Conocer los Criterios e Indicadores paneuropeos y su forma de utilización.	
CE-25.17.- Conocer las Normas UNE 162.000 de Gestión Forestal Sostenible.	
CE-25.18.- Conocer los sistemas mundiales más implantados de certificación forestal PEFC y FSC.	
CE-25.19.- Aplicar de forma práctica la certificación forestal a una superficie. Seguimiento y auditorías.	

New

Contents

Topic

BASIC LEGISLATION I	<ul style="list-style-type: none"> 1.- Right: The concept of law, Classification, sources and basic principles in Spanish legal framework. 2.- Spanish Constitution: Study as a whole, Principles, spanish constitution, reform constitutional. 3.- Congress and Senate: Elaboration of laws, Electoral law, prerogatives of Members and Senators, the congress of deputies (Composition, election, mandate, duration, Functions, etc.), the senate (composition, election, Mandate, duration, functions, etc.). 4.- Galician Parliament: Background, Parliamentary study as a whole, initiative Legislation, competition from Galicia, Galicia, sources of autonomic law. 5.- The European Union: Objectives of the U.E., Evolution, institutions, sources and principles. 6.- Organization of the state: Municipalities, Provinces and autonomous communities. 7.- Judicial branch and other institutions: Introduction, division of powers, defender of Town, general council of the judiciary, Courts, hearing and other institutions. 8.- Relations between citizens and Public administrations: Introduction, law Administrative, administrative act, classes, phases Of the procedure, administrative remedies. The Law of administrative procedure.
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LEGISLATION II

9.- Contracts Law: Classes, forms of contracting, Content and effects of contracts Administrative, compliance with contracts Administrative, resolution, termination and resignation.
 10.- Forest property: Concept of property, Legal concept of the hill, classification of the hill.
 11.- Law of mountains: Complete study of the Law Forest fires (43/2003 and 10/2006).
 12.- Development of the law at the regional level: Proposed draft of the new Mountains of Galicia.
 13.- Neighborhood forests in common hand: Legislation, concept, characteristics, process Legalization, organization, statutes, administration.
 14.- Other forest-related laws: Fires. Law of the land bank of Galicia, Decree of the Units of Forest Management.
 15.- Hunting and fishing legislation. Law of Conservation of biodiversity. Legislation of Natural spaces and conservation of Nature (Natura 2000 Network) and environment. Law of landscape, etc.

FOREST CERTIFICATION

16.- The protection of forests in the world After the 1992 Rio Summit.
 17.- International Management Initiatives Sustainable Forestry.
 18.- Ministerial Conferences for the Protection of forests in Europe.
 19.- Other global processes: Montreal, Tarapoto, dry Africa, etc.
 20.- Sustainable Forest Management.
 21.- Forest certification: Processes and Initiatives.
 22.- Criteria and indicators.
 23.- UNE 162,000 standards in Spain
 24.- Current systems more implemented: PEFC and FSC.
 25.- Practical forms of forest certification.

Planning

	Class hours	Hours outside the classroom	Total hours
Tutored works	30	0	30
Others	20	0	20
Classroom work	66	0	66
Case studies / analysis of situations	30	0	30
Multiple choice tests	1	0	1
Practical tests, real task execution and / or simulated.	1	0	1
Case studies / analysis of situations	1	0	1
Troubleshooting and / or exercises	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
Tutored works	The student, individually or in groups, prepares a paper on the subject of matter or prepare seminars, research, memoirs, essays, summaries of readings, lectures, etc.. Generally it is an autonomous activity / of the student / s that includes finding and collecting information, reading and literature management, writing ...
Others	Works on practical cases of application of the subjects of the program. The basic competences CB1 and CB2 are developed, the general CG08, CG09 and CG3, the specific CE25 and the transversal ones CBI1, CBI2, CBP4, CBS2, CBS3 and CBS 8.
Classroom work	Students develop exercises or classroom projects under the guidance and supervision of the teacher. May link autonomous development of student activities.
Case studies / analysis of situations	Analysis of an event, issue or actual event in order to know, interpret, solve, generate hypotheses, comparing data, reflect, complete knowledge, diagnose and training in alternative dispute resolution procedures.

Personalized attention

Methodologies	Description
Case studies / analysis of situations	
Tutored works	
Others	
Classroom work	
Tests	Description
Multiple choice tests	
Practical tests, real task execution and / or simulated.	
Case studies / analysis of situations	
Troubleshooting and / or exercises	

Assessment			
	Description	Qualification Evaluated	Competences
Case studies / analysis of situations	(*)El trabajo es valorado y evaluado por los propios compañeros tras la presentación del mismo y por el profesor quien tendrá en consideración todos los factores señalados en el apartado de trabajos tutelados Se evalúan las competencias básicas CB1 y CB2, las generales CG08, CG09 y CG3, las específicas CE25 (CE 25.1 a 25.19) y las transversales CBI1, CBI2, CBP4, CBS2, CBS3 y CBS 8.	20	CB1 CB2 CG8 CG9 CG31 CE25 CT1 CT2 CT11 CT14 CT15 CT20
Tutored works	(*)Se valora por parte del profesor la dedicación del alumno, el interés y el desarrollo de los trabajos, su valoración se realiza en la evaluación final del estudio de casos presentado Se evalúan las competencias básicas CB1 y CB2, las generales CG08, CG09 y CG3, las específicas CE25 (CE 25.1 a 25.19) y las transversales CBI1, CBI2, CBP4, CBS2, CBS3 y CBS 8.	0	
Others	(*)Trabajo sobre las últimas materias de actualidad y disposiciones legales sobre materias forestales en trámite de aprobación o entrada en vigor Se evalúan las competencias básicas CB1 y CB2, las generales CG08, CG09 y CG3, las específicas CE25 (CE 25.1 a 25.19) y las transversales CBI1, CBI2, CBP4, CBS2, CBS3 y CBS 8.	10	CB1 CB2 CG8 CG9 CG31 CE25 CT1 CT2 CT11 CT14 CT15 CT20

Classroom work	(*)Se valora la asistencia y participación con seguimiento individual de los alumnos Se evalúan las competencias básicas CB1 y CB2, las generales CG08, CG09 y CG3, las específicas CE25 (CE 25.1 a 25.19) y las transversales CBI1, CBI2, CBP4, CBS2, CBS3 y CBS 8.	10	CB1 CB2 CG8 CG9 CG31 CE25 CT1 CT2 CT11 CT14 CT15 CT20
Multiple choice tests	(*)Se realiza una prueba tipo test al final de la asignatura a modo de examen final sobre los contenidos del temario que se han desarrollado en el curso y sobre las materias de las visitas y prácticas. Se evalúan las competencias básicas CB1 y CB2, las generales CG08, CG09 y CG3, las específicas CE25 (CE 25.1 a 25.19) y las transversales CBI1, CBI2, CBP4, CBS2, CBS3 y CBS 8.	40	CB1 CB2 CG8 CG9 CG31 CE25 CT1 CT2 CT11 CT14 CT15 CT20
Practical tests, real task execution and / or simulated.	(*)Consistirá en trabajos de discusión sobre materias del temario que se plantearán para debate. Se evalúan las competencias básicas CB1 y CB2, las generales CG08, CG09 y CG3, las específicas CE25 (CE 25.1 a 25.19) y las transversales CBI1, CBI2, CBP4, CBS2, CBS3 y CBS 8.	0	
Case studies / analysis of situations	(*)El trabajo es valorado y evaluado por los propios compañeros tras la presentación del mismo y por el profesor quien tendrá en consideración todos los factores señalados en el apartado de trabajos tutelados. Se evalúan las competencias básicas CB1 y CB2, las generales CG08, CG09 y CG3, las específicas CE25 (CE 25.1 a 25.19) y las transversales CBI1, CBI2, CBP4, CBS2, CBS3 y CBS 8.	20	CB1 CB2 CG8 CG9 CG31 CE25 CT1 CT2 CT11 CT14 CT15 CT20
Troubleshooting and / or exercises	(*)Resolución de casos prácticos relacionados con las materias del programa. Se evalúan las competencias básicas CB1 y CB2, las generales CG08, CG09 y CG3, las específicas CE25 (CE 25.1 a 25.19) y las transversales CBI1, CBI2, CBP4, CBS2, CBS3 y CBS 8.	0	

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

IDENTIFYING DATA**Forest exploitation**

Subject	Forest exploitation			
Code	P03G370V01601			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	3rd	2nd
Teaching language				
Department				
Coordinator	Ortiz Torres, Luis			
Lecturers	Ortiz Torres, Luis			
E-mail	lortiz@uvigo.es			
Web	http://http://dasometriaweb.blogspot.com.es/			
General description	<p>(*)Se analizarán los fundamentos básicos de los aprovechamientos forestales madereros para aprender su planificación básica. Asimismo se estudiarán los principales sistemas de aprovechamiento usados en Galicia así como sus rendimientos, costes y normas de seguridad.</p> <p>En la enseñanza de la materia, tres aspectos son fundamentales a desarrollar, según nuestro punto de vista, en la enseñanza de la ciencia forestal: intuición, rigor y creación. La intuición ubica al alumno en el tipo de problemas que se quiere atacar (a través de ejemplos), crea una perspectiva (a menudo a través de la propia historia del problema) y en definitiva genera un interés. El segundo nivel formaliza todas esas intuiciones y las despoja de lo accesorio hasta desentrañar lo esencial. El rigor necesita de la abstracción y es fundamental en la transmisión de conocimientos técnicos. La creación permite construir soluciones propias, prácticas, cuanto antes tenga un contacto forestal y más aprenda de ello, más motivado va a continuar el estudio de la asignatura.</p>			

Competencies

Code		Typology
CB1	(*)Que os estudantes posúan e comprendan coñecementos que aporten unha base ou oportunidade de ser orixinal no desenvolvemento e / ou aplicación de ideas, a miúdo nun contexto de investigación	- know - Know How - Know be
CB2	Que los estudiantes sepan aplicar conocimientos adquiridos y su capacidad de resolución de problemas en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio	- know - Know How - Know be
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG23	CG-23: Capacidade para aplicar e desenvolver as técnicas de aproveitamento de produtos forestais madeirables e non madeirables.	- know - Know How
CE23	(*)CE-23: Capacidade para coñecer, comprender e utilizar os principios de: aproveitamentos forestais. Mellora forestal.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- know - Know How
CT5	(*)CBI 5: Capacidade de xestión da información.	- know - Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- know - Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- know - Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- know - Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- know - Know How
CT19	(*)CBS 7: Motivación pola calidade.	- know - Know How - Know be

Learning outcomes	
Learning outcomes	Competences
(*)CE-23.1	CB1 CB2 CG8 CG23 CE23 CT1 CT2 CT5 CT6 CT7 CT11 CT13 CT19 CT20

New

Contents	
Topic	
General information on forestry and its market in the world	Definition and types of use The Forest Products Market The demand and the companies The supply of forest products in the world
Marketing of wood	Main procedures for the sale and sale of wood Auction and drafting
Techniques, means and procedures of logging	Wood felling and processing Manual tools The chainsaw and other portable machines Automotive Fodder and Processing Machinery Waste treatment machinery (chippers and balers) Pull out of the wood (skider and autoloader) Adapted agricultural tractor Unblocking cables, helicopter and other methods Transport of wood (river, rail, sea and land) Parks for wood storage
Timber harvesting planning	Factors influencing planning Main systems of exploitation Organization of the uses Control systems in the harvests
Prevention of occupational hazards in forestry	The risk assessment Loss in the forestry sector
The environmental impact of harvesting	Main impacts of forestry activity Methodological guide
The use of bark	Cork Ecology The cork market
The use of resins	The use of resins The resin market

Planning			
	Class hours	Hours outside the classroom	Total hours
Master Session	26	63	89
Troubleshooting and / or exercises	3	11	14
Case studies / analysis of situations	6	12	18
Outdoor study / field practices	10	18	28
Short answer tests	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
Master Session	Presentation by the teacher of the contents on the subject under study, theoretical and / or guidelines for a job, exercise or project to be developed by the student.
Troubleshooting and / or exercises	Activity which formulated problem and / or exercises related to the course. The student should develop appropriate solutions or right through the exercise routines, application of formulas or algorithms, application processing procedures available information and interpretation of the results. It is often used to complement the lecture.
Case studies / analysis of situations	Analysis of an event, issue or actual event in order to know, interpret, solve, generate hypotheses, comparing data, reflect, complete knowledge, diagnose and training in alternative dispute resolution procedures.
Outdoor study / field practices	Activities application of knowledge to specific situations and basic skills acquisition and related procedural matter under study. They thrive in nonacademic outdoor spaces. Among them we can cite practical field visits to events, research centers, companies, institutions ... academic-professional interest to the student.

Personalized attention	
Methodologies	Description
Troubleshooting and / or exercises	It is a question of performing a practical work corresponding to a gap in the topics included in the agenda and publicly presenting said work.
Outdoor study / field practices	It is a series of practical visits to facilities and mountains

Assessment			
	Description	Qualification	Evaluated Competences
Master Session	(*)Asistencia e desempeño dedicado ás clases da materia. Se *evaluan as competencias básicas *CB1 e *CB2, as xerais *CG8, *CG18, *CG23, *CG38, *CG39, *CG40 e *CG41, a específicas CE23 (CE 23.1 a 23.10) e as transversais *CBI1, *CBI2, *CBI4, *CBI5, *CBI6, *CBI7, *CBP4, *CBS1, *CBS7.	10	CT1 CT2 CT13 CT19
Outdoor study / field practices	(*)Asistencia ás saídas e práctica de campo organizadas.	10	
Case studies / analysis of situations	(*)Resolución dun suposto práctico de planificación que o alumno deberá realizar e entregar Se *evaluan as competencias básicas *CB1 e *CB2, as xerais *CG8, *CG18, *CG23, *CG38, *CG39, *CG40 e *CG41, a específicas CE23 (CE 23.1 a 23.10) e as transversais *CBI1, *CBI2, *CBI4, *CBI5, *CBI6, *CBI7, *CBP4, *CBS1, *CBS7.	20	CT1 CT2 CT5 CT6 CT7 CT11 CT13 CT19
Short answer tests	(*)Resposta a preguntas relacionadas co temario Se *evaluan as competencias básicas *CB1 e *CB2, as xerais *CG8, *CG18, *CG23, *CG38, *CG39, *CG40 e *CG41, a específicas CE23 (CE 23.1 a 23.10) e as transversais *CBI1, *CBI2, *CBI4, *CBI5, *CBI6, *CBI7, *CBP4, *CBS1, *CBS7.	60	CT1 CT6 CT7 CT11 CT13

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

TOLOSANA, E. et al, El aprovechamiento maderero, Ediciones Mundi-Prensa, 2000

DALLA-PRIA, E et al, Manuel d'exploitation forestière. Tome I.et II, CTBA y ARMEF, 1995

MONTOYA, J. M., Los alcornoques, M.A.P.A. Madrid, 1988

ZAMORANO, J. L, Resinar de forma rentable, I.N.I.A. Madrid, 1995

ACEMM, Manual de prevención de riesgos laborales en el sector forestal, Fundación para la prevención de riesgos laborales. Gobierno de Cantabria, 2001

AAEF, Manual de prevención de riesgos laborales en el sector forestal, Junta de Andalucía, 2002

Recommendations**Subjects that continue the syllabus**

Forestry machinery/P03G370V01502

Subjects that are recommended to be taken simultaneously

Dasometry/P03G370V01602

Subjects that it is recommended to have taken before

Forestry/P03G370V01401

IDENTIFYING DATA

Dasometry

Subject	Dasometry			
Code	P03G370V01602			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Mandatory	3rd	2nd
Teaching language				
Department				
Coordinator	Díaz Vázquez, Raquel			
Lecturers	Díaz Vázquez, Raquel			
E-mail	raquel.diaz.vazquez@gmail.com			

Web

General description	<p>The *asignatura of *Dasometría consists of two big blocks: *Dasometría and Inventory.</p> <p>The first a forest basic science part of the *Dasonomía and very related with the *Selvicultura that centres in the study of the volumes and growths of the forest masses.</p> <p>The second is a group of technicians that allow to the technician in his professional work apply the sciences (*Dasometría) for *recopilar data on the masses and possible future evolution.</p> <p>In the education of the matter, three appearances are fundamental to develop, according to our point of view, in the education of the forest science: intuition, rigour and creation. The intuition situates to the student in the type of problems that wants to attack (through examples), creates a perspective (often through the own history of the problem) and in definite generates an interest. The second level formalises all these intuitions and undresses them of the accessory until *desentrañar the essential. The rigour needs of the abstraction and is fundamental in the transmission of technical knowledges. The creation allows to build own solutions, practical, what before have a forest contact and more learn of this, more motivated goes to continue the study of the *asignatura.</p>
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Competencies

Code	Typology
CE24 (*)CE-24: Capacidade para coñecer, comprender e utilizar os principios de: dasometría e inventariación forestal, ordenación de montes.	- know - Know How
CT6 (*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How

Learning outcomes

Learning outcomes	Competences
*CE-24.1: Know the basic concepts for the measurement of individual trees, the main variables used and the necessary technicians for his measurement.	CE24 CT6
The relation between competitions and results, and the weight of each competition inside the matter show in the pdf attach. http://forestales.uvigo.es/sites/default/files/24%20*Daso.Pdf#*overlay-*context=is/*content/competitions-and-resulted-of-learning-by-matter	

Contents

Topic	
0. Introduction to the Dasometry	<ol style="list-style-type: none">1. Why measure?2. Why measure trees and forest masses?3. Dasometry and affine sciences.4. Units of measure.5. Normalisation of symbols used in dasometry.6. Significant figures.7. Precision, bias and accuracy of the data.8. Errors.9. Weight or volume?10. Components of the tree.11. The form of the tree.12. Measurement by trip of fluid.13. Differences between quantity, value and price.

1. Measurement of Trees: Diameters	<ul style="list-style-type: none"> 1.1. Important terms. 1.2. Basic dasometric parameters. 1.3. Measurement of diameters of the trees. 1.4. Measurement of the thickness of bark, diametral growth and age of the tree. 1.5. Marked and designation of trees. 1.6. Measurement of distances.
2. Measurement of Trees: Heights	<ul style="list-style-type: none"> 2.1. Measurement of slopes. 2.2. Measurement of heights. 2.3. Recommendations for the measurement of heights. 2.4. Relascopio Of Bitterlich. 2.5. Other devices of the inventory. 2.6. Price devices dasometrycs.
3. Cubiculation By trozas.	<ul style="list-style-type: none"> 3.1. Cubiculation Of trees. 3.2. Types dendrométricos. 3.3. Procedures for cubages of trees. 3.4. Formulas for cubages by trozas. 3.5. Rules madereras.
4. Cubages Complete trunks.	<ul style="list-style-type: none"> 4.1. Graphic method. 4.2. Function of profile. 4.3. Formula of Pressler or of the point guideline. 4.4. Cubages Of trees in foot. Pressler-Bitterlich. 4.5. Parameters related with form: coefficients of form and mórphics.. 4.6. Height reduced.
5. Cubiculation Of masses.	<ul style="list-style-type: none"> 5.1. Stereometry. 5.2. Function of distribution diametric. 5.3. Half parameters of a mass. 5.4. Cubification Of forest masses. 5.5. Prices or tables of cubiculation. 5.6. Tables of mass. 5.7. Trees Type or modular values.
6. Wooden measurement stacked.	<ul style="list-style-type: none"> 6.1. Quantification of the wood stacked. Definition of stereo. 6.2. Other units of apparent volume. 6.3. Coefficient of stacked. 6.4. Methods to calculate the coefficient of stacked.
7. Epidometry	<ul style="list-style-type: none"> 7.1. Definition of epidometry 7.2. Diametral growth and age of the tree. 7.3. Analysis epidometric of trunks. 7.4. Definitions of growth. 7.5. Relation between growths. 7.6. Methods of obtaining of growths. 7.7. Definitions of growth of a mass.
8. Forest inventory	<ul style="list-style-type: none"> 8.1. Definition of inventory. 8.2. Parts of the inventory. 8.3. Types of inventory. 8.4. Planning of the inventory. 8.5. Design of the inventory. 8.6. Units of sampling. 8.7. Methods of sampling. 8.8. Number, size and form of the plots of sampling. 8.9. Methods of realisation of the inventory. 8.10. Determination of the number of sample for a determinate error. 8.10. Estadillos Of taking of data in field.

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	26	52	78
Troubleshooting and / or exercises	4	10	14
Case studies / analysis of situations	6	12	18
Outdoor study / field practices	14	24	38
Short answer tests	1	0	1
Reports / memories of practice	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
Master Session	Exhibition by part of the professor of the contents on the matter supporting some presentations of images, diagrams and videos that the student can see/download in the web indicated by the professor
Troubleshooting and / or exercises	Complement of the master lessons in which they expose practical exercises that the student has to develop applying the algorithms seen in the subject.
Case studies / analysis of situations	Study of real cases with examples of different Inventories realised analysing his memory and methodology. With special attention to the solutions of planning employed and the computer applications.
Outdoor study / field practices	They will realise three practical exits for the execution of a forest inventory previously designed in the classroom like practical case. The students will have of the material of necessary inventory for the take down of plots and his processed back in cabinet. It will have to present a memory of the inventory realised.

Personalized attention	
Methodologies	Description
Troubleshooting and / or exercises	
Outdoor study / field practices	

Assessment			
	Description	Qualification	Evaluated Competences
Master Session	Assistance and participation in the theoretical classes of the *asignatura (7.5 points). Delivery of exercises realised during the classes or of realisation out of the classroom (10 points) .	17.5	CE24
Short answer tests	Realisation of an examination in which they will evaluate the theoretical and practical concepts of the *asignatura, by means of questions type test, and of theoretical development, as well as practical exercises.	75	CE24 CT6
Reports / memories of practice	COMPULSORY assistance to the practical classes of the *asignatura, that realise usually in field. In exceptional cases, in which the assistance continued of the student was not possible, will realise a practical examination in field. COMPULSORY assistance to trip of practices of the *asignatura.	7.5	CE24 CT6

Other comments and July evaluation
 The student has to approve the practical part and the theoretical part separately. The assistance to the practices and to the trip of practices is of compulsory character to approve the *asignatura.

Sources of information

Basic Bibliography

Complementary Bibliography

DIEGUEZ, U. et al., Dendrometría, Mundi Prensa - Fundación Conde del Valle de Salazar, 2003

MARTÍNEZ CHAMORRO, et al., Manual para a cubicación, taxación e venda de madeira en pe e biomasa forestal, Universidade de Vigo, 2012

MADRIGAL, A.; ÁLVAREZ, J.G.; RODRÍGUEZ, R.; ROJO, A., Tablas de producción para los montes españoles, Fundación Conde del Valle de Salazar, 1999

DIEGUEZ, U. et al., Herramientas Selvícolas para la Gestión Forestal Sostenible en Galicia, Xunta de Galicia, 2009

PRIETO RODRÍGUEZ, A.; LÓPEZ QUERO, M., Dasometría. Versión española de "Dendrométrie de L'école national du génie rural des aux et des forêts", Editorial Paraninfo, 1994

ACEMM, Manual de prevención de riesgos laborales en el sector forestal, Fundación para la prevención de riesgos laborales. Gobierno de Cantabria, 2001

Recommendations

Subjects that continue the syllabus

Forest management/P03G370V01605

Physical planning and land management/P03G370V01701

Subjects that are recommended to be taken simultaneously

Projects/P03G370V01503

Subjects that it is recommended to have taken before

Mathematics: Statistics/P03G370V01301

Forestry/P03G370V01401

Forest exploitation/P03G370V01601

IDENTIFYING DATA**Repopulation**

Subject	Repopulation			
Code	P03G370V01603			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	3rd	2nd
Teaching language				
Department				
Coordinator	González Prieto, Óscar			
Lecturers	Díaz Vázquez, Raquel González Prieto, Óscar Picos Martín, Juan			
E-mail	oscargprieto@uvigo.es			
Web				
General description	(*)Los objetivos generales de la asignatura son: a) Conocer las bases, objeto y fundamentos de las Repoblaciones Forestales b) Conocer las características, métodos y medios necesarios para llevar a cabo las distintas operaciones relacionadas con las repoblaciones forestales c) Conocer los principios generales de la obtención de semilla forestal y producción de planta forestal en vivero.			

Competencies

Code		Typology
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG7	CG-07: Capacidade para identificar os diferentes elementos: elementos físicos.	- know - Know How
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG20	CG-20: Coñecemento das bases da mellora forestal e capacidade para a súa aplicación práctica á produción de planta e á biotecnoloxía.	- know - Know How
CE21	(*)CE-21: Capacidade para coñecer, comprender e utilizar os principios de: repoboacións forestais. Xardinería e viveiros.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT5	(*)CBI 5: Capacidade de xestión da información.	- Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How
CT14	(*)CBS 2: Adaptación a novas situacións.	- Know How - Know be
CT15	(*)CBS 3: Creatividade.	- Know be

Learning outcomes

Learning outcomes	Competences
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(*)

CG6
CG7
CG8
CG20
CE21
CT1
CT5
CT6
CT7
CT11
CT13
CT14
CT15

New

Contents

Topic

Module I Planning and implementation of afforestation

Theme 1. Concept and choice of species
Lesson 1.1. Concept of afforestation and commentary
Lesson 1.2. Background and need for afforestation
Lesson 1.3. Objectives of afforestation
Lesson 1.4. Species selection

Topic 2. Methods of re-population
Lesson 2.1. Types of methods
Lesson 2.2. Selection of method

Topic 3. Treatment of pre-existing vegetation
Lesson 3.1. Rationale and objectives
Lesson 3.2. Classification of clearing procedures
Lesson 3.3. Description of the clearing procedures

Topic 4. Soil preparation
Lesson 4.1. Rationale and objectives
Lesson 4.2. Classification of soil preparation procedures
Lesson 4.3. Description of soil preparation procedures
Lesson 4.4. Hydrological aspects of land clearing and soil preparation

Topic 5. Introduction of new species
Lesson 5.1. Density of introduction
Lesson 5.2. Plantings
Lesson 5.3. Plantations

Item 6. Further care of restocking and complementary work
Lesson 6.1. Subsequent care of restocking
Lesson 6.2. Complementary works

Topic 7. Environmental impact of reforestation
Lesson 7.1. Introduction and regulations
Lesson 7.2. Considerations on the environmental impact of forest R.
Lesson 7.3. Affected Factors
Lesson 7.4. Impact assessment
Lesson 7.5. Methodological conclusion

Module II Seeds

Topic 8. General information on forest seeds
Lesson 8.1. Harvest
Lesson 8.2. Extraction and cleaning
Lesson 8.3. Storage
Lesson 8.4. Conservation Treatments
Lesson 8.5. Analysis
Lesson 8.6. Germination treatments
Lesson 8.7. Sowing

Planning			
	Class hours	Hours outside the classroom	Total hours
Master Session	25.5	47.5	73
Troubleshooting and / or exercises	8	14	22
Outdoor study / field practices	8	8	16
Integrated methodologies	1	11.5	12.5
Case studies / analysis of situations	10.5	14	24.5
Multiple choice tests	0.5	0	0.5
Short answer tests	0.5	0	0.5
Practical tests, real task execution and / or simulated.	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

Master Session

The master lesson is the common form of development of the expository function, in which the teacher develops a series of concepts related to the contents of the Subject, and the student adopts a receptive role of this information.

The use of audiovisual media (slides, transparencies, videos, video canon, etc.) will be constant in these classes since the retention of information is much greater when combining oral and visual stimuli.

The masterful lesson serves to conceptually develop a theme, give global versions, develop a working methodology. etc.

Depending on the progress of the course, the content of each didactic unit will be provided in advance and in writing, either as notes or as a bibliography, which enables the student to attend classes with previous reading of the topic. On the other hand, if the student knows that what is taught can be found in a book when studying, his attitude in the classroom will be directed to understand the explanation, having to take only marginal notes of what is expanded.

In the case of this subject, the use of audiovisual media such as digital presentations, multimedia, transparencies, rear projection, etc. Should expedite the exposure of topics with a marked descriptive character, or in which drawings and schemes of complicated implementation are needed.

The classes of directed discussion, will be made at least one throughout the course and consists of the presentation of a topic, which must meet characteristics of real problem, richness in contradictions or reasons for controversy, should be of interest to the students, who Must know the activity well enough and be sufficiently qualified to express opinions about it.

The technique is oriented to overcoming uncritical memorization, fostering participation in the group and verbalization of ideas as a means that favors their assimilation. In addition, an important part of the pupils is a difficulty in expression and writing, which can contribute to overcome through this didactic resource. The role of the teacher as the conductor or moderator of the discussion is fundamental allowing all kinds of opinions on the subject.

In addition, and in a complementary way to the lecture, after the presentation of controversial topics or of special interest for the students, it is interesting to organize discussions of reduced scope, questions, etc. Such an activity, which is simpler to perform than the previous one, can be considered more as a resource of elaboration and control within the master's lesson than as a technique of a nature alien to it.

Other tools that help to reinforce the contents included in the master lessons are.

- Case study / situation analysis / directed discussion: Formulation, analysis, resolution and debate of a problem or exercise related to the thematic of the subject.
- Solving problems and / or exercises in an autonomous way: Formulation, analysis, resolution and debate of a problem or exercise related to the subject matter of the subject.
- Presentations / expositions: Oral presentation by the students of a specific subject or work (usually written presentation).
- Multimedia Sessions: Use of videographic / online material on aspects of the subject
- Study exits / field practices: Visits-outings to the field for the observation and study of aspects previously studied / analyzed

Troubleshooting and / or exercises

Resolution of problems and / or exercises Formulation, analysis, Resolution and debate of a problem or exercise related to the theme of the Subject, by the students.

Exercises and problems will be carried out on topics such as: static study of forest masses, dynamic study of the forest masses, etc

Outdoor study / field practices

The practice of the techniques, theoretically learned, must be carried out in contact with the professional practice which can only be obtained by actual practice of the techniques (or their direct observation) wherever they are carried (Industry, forest masses, etc.)

The practice of techniques, theoretically learned, must be carried out in close contact with professional practice which can only be obtained by practicing techniques (or their direct observation) wherever they are carried out (industry, forest masses, etc.).

The maximum number of field practices or practical trips should be carried out, without which theoretical teaching is insufficient to achieve the teaching objectives.

The field practices are therefore intended to establish the concepts of the subject, give students the opportunity to get in touch with the professional world and foster relationships between students and teacher student outside the center. The realization of practical trips make sense when they really contribute new knowledge that are impossible to acquire in the School itself.

Integrated methodologies	<ul style="list-style-type: none"> - Organization of specific seminars or conferences - Presentations / exhibitions: Oral presentation by the students of a theme Concrete or work (usually written presentation). - Multimedia Sessions: Use of videographic / online material on aspects of the subject - Days of study of aspects previously studied / analyzed in field trips
Case studies / analysis of situations	Case study / situational analysis - Case study / situation analysis or directed discussion: Formulation, analysis, resolution and debate of a problem or exercise related to the subject matter of the subject ..

Personalized attention

Methodologies	Description
Case studies / analysis of situations	
Troubleshooting and / or exercises	
Outdoor study / field practices	

Assessment

	Description	Qualification	Evaluated Competences
Case studies / analysis of situations	(*)	30	CG6 CG7 CG8 CG20 CE21 CT6 CT7 CT11 CT13 CT14 CT15
Integrated methodologies	(*)	0	
Master Session	(*)	0	
Multiple choice tests	(*)	30	CG6 CG7 CG8 CG20 CE21
Short answer tests	(*)	40	CG6 CG7 CG8 CG20 CE21 CT1 CT11

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Subjects that are recommended to be taken simultaneously

Botany/P03G370V01303

Forestry Ecology/P03G370V01402

Subjects that it is recommended to have taken before

Biology: Plant Biology/P03G370V01201

IDENTIFYING DATA**Forestry hydrology**

Subject	Forestry hydrology			
Code	P03G370V01604			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	3rd	2nd
Teaching language				
Department				
Coordinator				
Lecturers				
E-mail				
Web	http://http://www.forestales.uvigo.es/			
General description	Description of the elements that influence in the hydrological cycle. Characterisation of hydrographic basins and quantification of the erosion. Technicians of control and management of the hydrographic basins			

Competencies

Code	Typology
CG15 CG-15: Capacidade para o uso das técnicas de restauración hidrolóxico forestal.	- know - Know How
CE9 (*)CE-09: Capacidade para coñecer, comprender e utilizar os principios de: hidráulica forestal; hidroloxía e restauración hidrolóxico-forestal.	- know - Know How
CT20 (*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
Knowing the main characteristics of hydrologic cycle , understanding and skilled in the methods of assessment precipitation evaporation , infiltration and runoff at water basin forest	CG15 CE9 CT20
New	

Contents

Topic	
Subject1 Introduction and generalities	Hydrological cycle. The hydrological basin. Physical parameters of the basin. Soil and climate. Actions of the forest on the water regulation. Hydrological subsystems. Hydrological models. legal framework .
Subject 2 Precipitation	Training and types. Measured atmospheric humidity. Terminal Speed drops rain. Size drops and kinetical energy. Measure and distribution of the precipitation. Methods of work with rainfall data. Half precipitation on an area
Subject 3 Evaporation	Solar radiation Profiles of wind in vegetation Evaporation and evapotranspiration Empirical methods Interception and transpiration in forests

Subject 4 Infiltration	Measure of humidity and potential water in the floor influential Factors instantaneous and accumulated Infiltration Flow in saturated means. Law of Darcy Models of infiltration Measured of the hydraulic conductivity
Subject 5 Runoff	Generation and classification of the flow of runoff Coefficient of runoff. Number Of Curve Methods of Green-Ampt Methods of estimate of runoff monthly Water balance and Thornthwaite
Subject 6 Hydrographs	Separation of basic flow Unitary and synthetic hydrographs Maximum Discharge of runoff
Subject 7 Surface water and groundwater	Aquifers hydrogeological variables Equations of subterranean flow
Subject 8 hydrological Measurements	Discharge Measurements of speed of flow Measurements with sensors of pressure Types of control of relation level and discharge
Subject 9 Driving of avenues of water	Introduction Traffic of aggregated systems hydrological Traffic in rivers Traffic distributed of increasing cinematic Wave
Subject 10 hydrological Statistics	Concepts. Analysis of frequency. Work of distribution. Period of return. Theory of adjust statistical. Analysis of frequency for extreme values .
Subject 11 hydrological Restoration forest	Action of the forest on water regulation. Distribution of the the precipitation in forest masses. Intercept. Translocation. Trunk runoff Hydrological techniques reforestation
Subject 12: Water erosion	Types of erosion. Parametric models Models of analytical solution . Stabilization and rehabilitation techniquesn of areas with risk of erosion
Subject 13: Restoration of banks and rivers	Main pressures and impacts of the Spanish rivers Environmental Assessment of the rivers Features and banks Performances for the improvement and restoration of rivers Development projects Ecological restoration of rivers and banks
Subject 14: transversal Works in the course	Dams of consolidation Dams of retention Planning and technical criteria of execution Act longitudinal in margines rivers Design of breakwaters Pavers background Deflectors

Planning			
	Class hours	Hours outside the classroom	Total hours
Practice in computer rooms	10	10	20
Autonomous troubleshooting and / or exercises	30	30	60
Outdoor study / field practices	3	3	6
Master Session	30	30	60
Troubleshooting and / or exercises	3	0	3
Short answer tests	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
Practice in computer rooms	I handle of software draw computer-aided for treatment of watershed. By means of this methodology develop the competitions A19 and A62
Autonomous troubleshooting and / or exercises	They will explain and/or they will resolve problems in group from a series of billed facilitated by the professor. The students will have to resolve a small number of exercises for each one of the subjects, that will have to deliver in the term indicated for his qualification. By means of this methodology develop the competitions A19 and A62
Outdoor study / field practices	It will realise visit to a place of interest hydrological to observe the hydrological conditions of the same and infrastructures and techniques of restoration employed. By means of this methodology develop the competitions A19 and A62
Master Session	Classes in the classroom to the groups, where explain the corresponding contents to each subject. By means of this methodology develop the competitions A19 and A62

Personalized attention	
Methodologies	Description
Autonomous troubleshooting and / or exercises	

Assessment			
	Description	Qualification Evaluated	Competences
Troubleshooting and / or exercises	Practical supposition for his resolution. By means of this methodology evaluate the competitions A19 and A62	30	CG15 CE9
Short answer tests	Proof with questions type test and of short answer, where the student will have to show the knowledge purchased. By means of this methodology evaluate the competitions A19 and A62	70	CG15 CE9

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

IDENTIFYING DATA**Forest management**

Subject	Forest management			
Code	P03G370V01605			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	3rd	2nd
Teaching language	Spanish Galician			
Department				
Coordinator	Fernández Alonso, José María			
Lecturers	Fernández Alonso, José María González Prieto, Óscar Ortiz Torres, Luis			
E-mail	txema182@gmail.com			
Web				
General description	(*)(*)Durante el curso de Ordenación de Montes se analizarán los diferentes métodos para la Durante o curso de Ordenación de Montes analizaranse os diferentes métodos para a organización e xestión do aproveitamento dos recursos naturais forestais. A ensinanza basearase no repaso da historia forestal europea e da paralela evolución dos métodos de ordenación. A presentación de problemas permitirá introducir as distintas solucións e a aprendizaxe das mesmas por parte do alumno.			

Competencies

Code		Typology
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG7	CG-07: Capacidade para identificar os diferentes elementos: elementos físicos.	- know - Know How
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG9	CG-09: Capacidade para analizar a estrutura e función ecolóxica dos sistemas e recursos forestais, incluíndo as paisaxes.	- know - Know How
CG31	CG-31: Capacidade para aplicar as técnicas de ordenación forestal e planificación do territorio, así como os criterios e indicadores da xestión forestal sostible no marco dos procedementos de certificación forestal.	- know - Know How
CE24	(*)CE-24: Capacidade para coñecer, comprender e utilizar os principios de: dasometría e inventariación forestal, ordenación de montes.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- Know How
CT5	(*)CBI 5: Capacidade de xestión da información.	- Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- Know How

Learning outcomes

Learning outcomes	Competences
(*)CE-23.1	CG6 CG7 CG8 CG9 CG31 CE24 CT1 CT2 CT5 CT11

New

Contents

Topic	
Objectives of Forest Management	Definitions and concept Spanish Forest History Conditioning and Tools Objectives of Forest Management Types of Forest Production
Structure and content of Mountain Management Projects	The classic project Structure and content of the Projects
Forestry and Economic Foundations of Forest Management	Silvicultural bases of management Investment analysis Criteria for the determination of the shift and age of maturity
Application Regulations for Ordinance Projects	Application regulations
Impacts of Forestry Activity in the Management Project	Main Impacts Visual impact assessment

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	26	52	78
Troubleshooting and / or exercises	4	10	14
Case studies / analysis of situations	6	12	18
Teaching and/or informatives events	4	6	10
Outdoor study / field practices	10	18	28
Short answer tests	1	0	1
Reports / memories of practice	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
Master Session	Presentation by the teacher of the contents on the subject under study, theoretical and / or guidelines for a job, exercise or project to be developed by the student.
Troubleshooting and / or exercises	Activity which formulated problem and / or exercises related to the course. The student should develop appropriate solutions or right through the exercise routines, application of formulas or algorithms, application processing procedures available information and interpretation of the results. It is often used to complement the lecture.
Case studies / analysis of situations	Analysis of an event, issue or actual event in order to know, interpret, solve, generate hypotheses, comparing data, reflect, complete knowledge, diagnose and training in alternative dispute resolution procedures.
Teaching and/or informatives events	Conferences, lectures, exhibitions, panel discussions, debates ... performed by renowned speakers, which you can drill or supplement the contents of the field.
Outdoor study / field practices	Activities application of knowledge to specific situations and basic skills acquisition and related procedural matter under study. They thrive in nonacademic outdoor spaces. Among them we can cite practical field visits to events, research centers, companies, institutions ... academic-professional interest to the student.

Personalized attention

Methodologies	Description
Troubleshooting and / or exercises	
Outdoor study / field practices	

Assessment

Description	Qualification Evaluated Competeness
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Short answer tests	(*)Respuesta a preguntas relacionadas con el temario	80	CG6 CG7 CG8 CG9 CG31 CE24 CT11
Reports / memories of practice	(*)Realización de una memoria con la metodología y los resultados de las prácticas	20	CG6 CG7 CG8 CG9 CG31 CE24 CT1 CT2 CT5 CT11

Other comments and July evaluation

Sources of information

Basic Bibliography

MADRIGAL, A, Ordenación de Montes Arbolados, ICONA, 1994

Complementary Bibliography

GONZALEZ MOLINA, et al., Manual de Ordenación por Rodales, Centre Tecnologic Forestal de Catalunya, 2006

DAVIS, L. S.; JOHNSON, K. N.; BETTINGER, P. S.; HOWARD, T. E, Forest Management (4th ed.), McGraw Hill Publishing Co., 2001

MADRIGAL, A.; ÁLVAREZ, J.G.; RODRÍGUEZ, R.; ROJO, A., Tablas de producción para los montes españoles, Fundación Conde del Valle de Salazar, 1999

DÍAZ-MAROTO, I., Evolución de los métodos de ordenación de montes en España. Situación actual., Escuela Politécnica Superior, Lugo, 1995

ACEMM, Manual de prevención de riesgos laborales en el sector forestal, Fundación para la prevención de riesgos laborales. Gobierno de Cantabria, 2001

DIEGUEZ, U. et al., Herramientas Selvícolas para la Gestión Forestal Sostenible en Galicia, Xunta de Galicia, 2009

MARTÍNEZ CHAMORRO, et al., Manual para a cubicación, taxación e venda de madeira en pe e biomasa forestal, Universidade de Vigo, 2012

Manual de ordenación de montes de Andalucía, Junta de Andalucía, 2004

Recommendations

Subjects that continue the syllabus

Physical planning and land management/P03G370V01701

Subjects that are recommended to be taken simultaneously

Projects/P03G370V01503

Subjects that it is recommended to have taken before

Mathematics: Statistics/P03G370V01301

Forestry/P03G370V01401

Forest exploitation/P03G370V01601

Dasometry/P03G370V01602

IDENTIFYING DATA**Wood technology**

Subject	Wood technology			
Code	P03G370V01606			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	3rd	2nd
Teaching language				
Department				
Coordinator	Bartolome Mier, Javier			
Lecturers	Bartolome Mier, Javier			
E-mail	jbartolome@uvigo.es			
Web	http://www.forestales.uvigo.es			
General description	*Asignatura In which it studies the wood like industrial prime matter, his characteristics and properties			

Competencies

Code	Typology
CG32 CG-32: Capacidade para caracterizar as propiedades anatómicas e tecnolóxicas das materias primas forestais madeirables así como das tecnoloxías e industrias destas materias primas.	- know - Know How
CT19 (*)CBS 7: Motivación pola calidade.	- Know be
CT20 (*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
Capacity to relate the principles of anatomical structure intern and properties of the wood with his potentiality for the supply to the forest industry	CG32 CT19 CT20
New	

Contents

Topic	
Macroscopic structure of the wood	Albura, heartwood, marrow longitudinal and radial Fabrics Growth in rings Anisotropy of the wood Texture, grain and design
Microscopic structure of the wood	Microscopic structure of the wood of coniferous microscopic Structure of the wood of leafy
Structure submicroscopic	Submicroscopic structure Chemical composition of the wood
Anomalies and defects of the wood	Knots juvenile Wood Anomalies of the growth of the layer cambial Fends Wood of reaction internal Tensions of growth Stock exchanges of resin Other defects of the wood
Properties of the wood	Physical properties of the wood mechanical Properties of the wood
Industrial classification of the wood in roll	Classification in function of the characteristics of the wood and his aptitude for the different industrial applications

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	29	72	101
Laboratory practises	10	20	30
Outdoor study / field practises	4	8	12
Introductory activities	1	0	1
Short answer tests	2	0	2
Reports / memories of practice	0	4	4

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

Methodologies	
	Description
Master Session	Exhibition of aims and contents and importance of the same inside the group of competitions of the subject.
Laboratory practises	Realisation and individual presentation and in groups of works of laboratory
Outdoor study / field practises	Explanation in situ of industrial and technical processes of laboratory
Introductory activities	Initial explanation of the aims and development of the subject.

Personalized attention	
Methodologies	Description
Laboratory practises	

Assessment			
	Description	Qualification	Evaluated Competences
Master Session	Continuous evaluation through the assistance to the classes of classroom	20	CG32
Laboratory practises	Continuous evaluation through the assistance to the practices of laboratory	5	CG32 CT19 CT20
Short answer tests	Realisation of partial proofs and finals	70	CG32
Reports / memories of practice	Realisation and presentation of the memories of the practices of laboratory	5	CG32 CT19 CT20

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Subjects that continue the syllabus

Primary wood processing industries/P03G370V01706

Wood preservation and drying technology/P03G370V01705

Subjects that it is recommended to have taken before

Physics: Physics I/P03G370V01102

Physics: Physics II/P03G370V01202

Botany/P03G370V01303

IDENTIFYING DATA**Xylo energy**

Subject	Xylo energy			
Code	P03G370V01607			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	3rd	2nd
Teaching language				
Department				
Coordinator	Ortiz Torres, Luis			
Lecturers	Ortiz Torres, Luis			
E-mail	lortiz@uvigo.es			
Web	http://www.webs.uvigo.es/lortiz			
General description	(*)procesos de transformación física y conversión energética de biomasa			

Competencies

Code		Typology
CG2	CG-02: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Físicos.	- know - Know How
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG23	CG-23: Capacidade para aplicar e desenvolver as técnicas de aproveitamento de produtos forestais madeirables e non madeirables.	- know - Know How
CG33	CG-33: Capacidade para caracterizar as propiedades anatómicas e tecnolóxicas das materias primas forestais non madeirables así como das tecnoloxías e industrias destas materias primas.	- know - Know How
CE26	(*)CE-26: Capacidade para coñecer, comprender e utilizar os principios de: procesos industriais xiloenerxéticos.	- know - Know How
CT3	(*)CBI 3: Capacidade de comunicación oral e escrita tanto na lingua vernácula como en linguas estranxeiras.	- know - Know How
CT8	(*)CBP 1: Capacidades de traballo en equipo, con carácter multidisciplinar e en contextos tanto nacionais como internacionais.	- Know be
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How

Learning outcomes

Learning outcomes	Competences
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(*)CE-26: Capacidad para conocer, comprender y utilizar los principios de: Procesos industriales xiloenergéticos.	CG2 CG8 CG23
CE-26.1.-Aprender las técnicas para el aprovechamiento energético de la biomasa fo-renal e industrial	CG33
CE-26.2 Comprender los conceptos básicos sobre las energías xilogeneradas, unida-des, etc	CE26
CE-26.3 Comprender los aspectos ecológicos y de sostenibilidad a tener en cuenta en las explotaciones y plantaciones de biomasa con fines energéticos	CT3 CT8
CE-26.4 Comprender las técnicas de laboratorio para el cálculo de parámetros físicos, químicos y energéticos de la biomasa	CT13
CE-26.5 Conocer los sistemas y metodologías para el cálculo de poderes caloríficos (pcs, pci), humedad (b.h/,b.s.), productos volátiles, % cenizas,% C fijo, distribuciones granulométricas parciales y acumuladas, densidad, etc	
CE-26.6 Conocer las técnicas y sistemas industriales de cosechado, astillado, empaca-do, secado natural, secado forzado, cribado y reducción granulométrica mediante mo-lienda de los residuos forestales y de las industrias de la madera	
CE-26.7 Conocer los métodos y equipos industriales para la densificación de biomasa lignocelulósica mediante procesos de briquetado y pelletizado	
CE-26.8 Conocer los equipos, técnicas, sistemas y maquinaria para la transformación física y conversión energética de biomasa	
CE-26.9 Conocer los fundamentos del cálculo de parámetros básicos de combustión (aire estequimétrico, emisiones contaminantes, rendimientos, etc)	
CE-26.10 Conocer los equipos de combustión convencional, combustión en lecho fluidizado, gasificación, pirólisis, carbonización	
CE-26.11 Conocer las técnicas y sistemas para la obtención de biocombustibles líqui-dos como bioalcohol y biodiesel	
CE-26.12 Conocer los equipos y sistemas para la producción de energía eléctrica con biomasa, turbinas de vapor, turbinas de gas, motores, etc	
CE-26.13 Conocer las principales especies y sistemas para la implantación y gestión de cultivos energéticos de corta rotación	

New

Contents

Topic

Topic 1.- INTRODUCTION: BIOMASS AS A SOURCE OF ENERGY	1.1.- Concept and forms of BIOMASS 1.2.- Historical evolution of the energy utilization of Biomass .. 1.3.- Sources of Biomass 1.4.- Characteristics of the biomass from the energetic point of view 1.5.- Advantages presented by the energy use of the Phytomass 1.6.- Technologies for energy conversion of biomass 1.6.1.- Chemical methods of conversion 1.6.2.- Thermochemical conversion methods 1.6.3.- Biochemical conversion methods 1.6.4.- Efficiency of the different methods of energy conversion. 1.7.- Products derived from biomass 1.7.1.- Macroeconomic aspects of the production and use of biofuels
2.- XILOGENERATED ENERGIES	2.- XILOGENERATED ENERGIES
3. COLLECTION AND OBTAINMENT OF RESIDUAL BIOMASS	3.1 systems for collecting residual forest biomass 3.1.1 Forest machines
4. PRETRATING PROCESSES (PHYSICAL TRANSFORMATION) OF RESIDUAL PHYTOMASE	4.1 Chipping and packaging 4.1.1 Problems of large chipping 4.2 Natural Drying 4.3 Forced drying grind 4.4 4.4.- Sieving 4.5.- densification
Topic 5. DEHYDRATION OF RESIDUAL PHYTOMASE	5.1 ??Water in wood 5.1.1 Humidity Equilibrium 5.1.2 Influence of moisture content on calorific 5.2 thermogenesis 5.2.1 dynamic drying full of wood waste chips 5.2.2 Dry matter losses 5.3 Practical experiences of natural drying 5.3.1 Forced ventilation 5.3.2 Experiences in Spain

Topic 6. COMPACTION OF RESIDUAL PHYTOMASE	6.1 Historical evolution 6.2 Background to research and development 6.2.1 laboratory experimentation 6.2.2 Experimentation in industrial presses 6.2.3 Studies of theoretical models 6.3 Prospects for the future 6.4 Problems and densification technologies on an industrial scale 6.4.1 manufacture of briquettes 6.4.2 pelletizing
Topic 7. CURRENT SITUATION OF THE FUEL PRODUCTION SECTOR IN SPAIN	7.1 The raw materials used 7.2 The equipment used 7.2.1 Sizing companies 7.3 Products obtained 7.3.1 Packaging 7.4.- Consumer sectors 7.4.1.- prices
Topic 8. CURRENT SITUATION OF THE COMBUSTIBLE PELLET MANUFACTURING SECTOR IN SPAIN	8.1 Characteristics of fuel pellets 8.2 prices
Topic 9.- THERMOCHEMICAL PROCESSES OF ENERGY CONVERSION OF PHYTOMASE.	9.1.- Combustion 9.2.- Gasification 9.3.- Pyrolysis 9.4.- Liquefaction
Topic 10. THE COMBUSTION	10.1 The Theory of Combustion 10.1.1.- types of combustion 10.1.2.- minimum combustion air 10.1.3.- Combustion fumes 10.2.- Combustion equipment 10.2.1.- Fluidized combustion (FBC)
Topic 11.GASIFICATION	11.1.- Types of gasifiers 11.2.- Gasification with air 11.3.- Gasification with oxygen and / or steam 11.4.- Gasification with Hydrogen 11.5.- Gasification with catalysts
Topic 12. PIROLISIS	12.1.- Products obtained 12.2.- Carbonization (charcoal)
Topic 13.- ELECTRICAL ENERGY GENERATION EQUIPMENT AND SYSTEMS	
Topic 14.- ENERGY CROPS OF SHORT ROTATION	14.1.- Prospects of intensive cultivation of biomass in the European Union before the new Community Agricultural Policy (CAP) 14.2.- Types of energy crops 14.2.1.- Agroelectrical crops 14.2.2.- Bioalcohol 14.2.3.- Bio-fuels
PRACTICE Nº 1	SAMPLES OF WASTE LABORATORY ANALYSIS PLACE: E. XILOGENERADAS LABORATORY
PRACTICE Nº2	PILOT PLANT FOR SLIPPING-MILLING-DENSIFICATION PLACE: E. XILOGENERADAS WORKSHOP
PRACTICE Nº 3	ASTILLADO DESCORTEZADO COMBUSTION COGENERATION PLACE: ENCE (PONTEVEDRA) DEPARTURE FROM THE EIF - 10h
PRACTICE Nº 4	MOLIENDA DRYING PELETIZED COGENERATION PLACE: PÉLET FACTORY (BASTAVALES) EIF OUTPUT - 10 h
PRACTICE Nº 5	Visit to an installation with forest biomass boiler. Location: Campus de Pontevedra

Planning			
	Class hours	Hours outside the classroom	Total hours
External practises	18	36	54
Laboratory practises	5	10	15
Master Session	26	52	78
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
External practises	These are views of industrial installations
Laboratory practises	These are lab work and pilot plant of xylenogenic energies
Master Session	These are classroom classes

Personalized attention	
Methodologies	Description
Master Session	It refers to the theory classes held in the classroom
External practises	These are visits to industrial facilities
Laboratory practises	Laboratory work and pilot plant of xylogen energies

Assessment			
	Description	Qualification Evaluated	Competences
External practises	(*)Valorarase a asistencia ás clases presenciais e visitas/prácticas de campo	20	CG2 CG8 CG23 CG33 CE26 CT3 CT8 CT13
Laboratory practises	(*)Valorarase os traballos/exercicios realizados durante as mesmas.	20	CG2 CG8 CG23 CG33 CE26 CT3 CT8 CT13
Long answer tests and development	(*)Avaliarase mediante un exame final	60	CG2 CG8 CG23 CG33 CE26 CT3 CT8 CT13

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

IDENTIFYING DATA**Environmental management**

Subject	Environmental management			
Code	P03G370V01608			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	3rd	2nd
Teaching language				
Department				
Coordinator	Ortiz Torres, Luis			
Lecturers	Martínez Chamorro, Enrique José Ortiz Torres, Luis			
E-mail	lortiz@uvigo.es			
Web	http://www.webs.uvigo.es/lortiz			
General description	(*)metodos e sistemas de xestión medioambiental			

Competencies

Code	Typology
CG18 CG-18: Capacidade para aplicar as técnicas de auditoría.	- Know How
CG19 CG-19: Capacidade para aplicar as técnicas de xestión ambiental.	- Know How
CE38 (*)CE-38: Capacidade para coñecer, comprender e utilizar os principios de: xestión ambiental da industria forestal.	- know - Know How
CT1 (*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2 (*)CBI 2: Capacidade de organización e planificación.	- Know How
CT11 (*)CBP 4: Habilidades de razoamento crítico.	- Know How
CT14 (*)CBS 2: Adaptación a novas situacións.	- Know be
CT15 (*)CBS 3: Creatividade.	- Know be
CT20 (*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
(*)CE-38.- Capacidad para conocer, comprender y utilizar los principios de: Gestión ambiental de la industria forestal.	CG18 CG19
CE-38.1.- Conocer los principales problemas de la contaminación atmosférica.	CE38
CE-38.2.- Conocer los principales elementos y actividades que producen la contaminación atmosférica.	CT1
CE-38.3.- Conocer las principales tecnologías para el tratamiento de las emisiones por gases.	CT2
CE-38.4.- Conocer las principales sustancias contaminantes de los efluentes líquidos.	CT11
CE-38.5.- Conocer los principales sistemas de tratamiento y depuración de efluentes líquidos y de aguas residuales.	CT14 CT15
CE-38.6.- Conocer los tipos de residuos sólidos y su composición.	CT20
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.	

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.- DISFRANCO
- F.6.2.3.-DEPURATION
- F.6.3.4. UNLOCKED
- F.6.3.5. REFINA
- 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	Evaluated Competences
Outdoor study / field practices	(*)Valórase a asistencia dos alumnos ás saídas prácticas	10	CG18 CG19 CE38 CT1 CT11 CT14 CT20
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	CG18 CG19 CE38 CT1 CT2 CT11
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 and July evaluation

Sources of information

Basic Bibliography

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Gil, Manuel, Depuración de aguas residuales, 1, CSIC, 2013, Madrid

Seoanez, Mariano, Manual de aguas residuales industriales, 1, Mac Graw Hill, 2012, Madrid

Picoraio, Simona, Gestión de residuos Urbanos, 1, CEYSA, 2016, Madrid

Seoanez, Mariano, Tratado de la contaminación atmosférica, 1, Mundi Prensa, 2012, Madrid

Complementary Bibliography

Recommendations

IDENTIFYING DATA**Physical planning and land management**

Subject	Physical planning and land management			
Code	P03G370V01701			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	1st
Teaching language				
Department				
Coordinator				
Lecturers				
E-mail				
Web				
General description				

Competencies

Code		Typology
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG9	CG-09: Capacidade para analizar a estrutura e función ecolóxica dos sistemas e recursos forestais, incluíndo as paisaxes.	- Know How
CG31	CG-31: Capacidade para aplicar as técnicas de ordenación forestal e planificación do territorio, así como os criterios e indicadores da xestión forestal sostible no marco dos procedementos de certificación forestal.	- Know How
CE32	(*)CE-32: Capacidade para coñecer, comprender e utilizar os principios de: ordenación e planificación do territorio. Paisaxismo forestal.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- know - Know How
CT4	(*)CBI 4: Coñecementos básicos de informática.	- know
CT5	(*)CBI 5: Capacidade de xestión da información.	- Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT8	(*)CBP 1: Capacidades de traballo en equipo, con carácter multidisciplinar e en contextos tanto nacionais como internacionais.	- Know be
CT9	(*)CBP 2: Habilidades nas relacións interpersoais.	- Know be
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
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(*)CE-32: Capacidad para conocer, comprender y utilizar los principios de: Ordenación y Planificación del Territorio. Planes de Paisajismo forestal.

CG6
CG9
CG31
CE32
CT1
CT2
CT4
CT5
CT6
CT7
CT8
CT9
CT13
CT20

New

Contents

Topic

Topic I: GENERAL THEORY OF PLAN. PHYSICS	Concept of Physical Planning. Physical Planning in Engineering Background of Physical Planning Environmental and integrated inventories Evolution of Physical Planning studies Definitions of Physical Planning Ecologically based physical planning
Topic II: PHYSICAL PLANNING PROCESS	Typology and Purposes of Planning Operational techniques Levels of application Fundamental relationships General scheme Definition of objectives Inventory Modeling Spatial classification Choice of Alternatives Decision making Contrast of Planning Planning follow-up
Topic III: THE TOOLS FOR PHYSICAL PLANNING	Introduction to Geographic Information Systems. The S.I.G. Applied to Physical Planning and Territorial Planning.

Planning

	Class hours	Hours outside the classroom	Total hours
Tutored works	0	58	58
Presentations / exhibitions	25	25	50
Case studies / analysis of situations	21	21	42

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

Methodologies

	Description
Tutored works	The student, individually or in groups, prepares a paper on the subject of matter or prepare seminars, research, memoirs, essays, summaries of readings, lectures, etc.. Generally it is an autonomous activity / of the student / s that includes finding and collecting information, reading and literature management, writing ...
Presentations / exhibitions	Exhibition by the students to the teacher and / or a group of students of a subject matter or content of the results of a job, exercise, project ... It can be done individually or in groups.
Case studies / analysis of situations	Analysis of an event, issue or actual event in order to know, interpret, solve, generate hypotheses, comparing data, reflect, complete knowledge, diagnose and training in alternative dispute resolution procedures.

Personalized attention

Methodologies	Description

Tutored works

Assessment			
	Description	Qualification	Evaluated Competences
Tutored works	(*)	50	CG6 CG9 CG31 CE32 CT1 CT2 CT4 CT5 CT6 CT7 CT8 CT9 CT13 CT20
Presentations / exhibitions	(*)	50	CG6 CG9 CG31 CE32 CT1 CT2 CT4 CT5 CT6 CT7 CT8 CT9 CT13

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

IDENTIFYING DATA**Hunting and fishing management**

Subject	Hunting and fishing management			
Code	P03G370V01702			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	1st
Teaching language				
Department				
Coordinator	Valero Gutiérrez del Olmo, Enrique María			
Lecturers	Valero Gutiérrez del Olmo, Enrique María			
E-mail	evalero@uvigo.es			
Web	http://http://faitic.uvigo.es/index.php/es/			
General description	(*)Preténdese que o alumno adquira os coñecementos necesarios para a realización de Inventarios poboacionais, redacción de proxectos de xestión da caza e da pesca, avaliación e medidas correctoras dos hábitats e para a realización de repoboacións cinexéticos e piscícolas			

Competencies

Code		Typology
CG25	CG-25: Capacidade para xestionar e protexer as poboacións de fauna forestal, con especial énfase nas de carácter cinexético e piscícola.	- Know How
CG35	CG-35: Capacidade para deseñar, dirixir, elaborar, implantar e interpretar proxectos.	- know - Know How
CG36	CG-36: Capacidade para deseñar, dirixir, elaborar, implantar e interpretar plans.	- know - Know How
CG37	CG-37: Capacidade para redactar informes técnicos.	- Know How
CG38	CG-38: Capacidade para redactar memorias de recoñecemento.	- Know How
CG39	CG-39: Capacidade para redactar valoracións.	- Know How
CG40	CG-40: Capacidade para redactar peritaxes.	- Know How
CG41	CG-41: Capacidade para redactar taxacións.	- Know How
CE33	(*)CE-33: Capacidade para coñecer, comprender e utilizar os principios de: xestión de caza e pesca. Sistemas acuícolas.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- Know How
CT3	(*)CBI 3: Capacidade de comunicación oral e escrita tanto na lingua vernácula como en linguas estranxeiras.	- know - Know How
CT5	(*)CBI 5: Capacidade de xestión da información.	- Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT8	(*)CBP 1: Capacidades de traballo en equipo, con carácter multidisciplinar e en contextos tanto nacionais como internacionais.	- Know be
CT9	(*)CBP 2: Habilidades nas relacións interpersoais.	- Know be
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How
CT14	(*)CBS 2: Adaptación a novas situacións.	- Know be
CT15	(*)CBS 3: Creatividade.	- Know be
CT16	(*)CBS 4: Liderado.	- Know be
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
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(*)

CG25
CG35
CG36
CG37
CG38
CG39
CG40
CG41
CE33
CT1
CT2
CT3
CT5
CT6
CT7
CT8
CT9
CT11
CT13
CT14
CT15
CT16
CT20

New

Contents

Topic

BLOCK I: HUNTING AND KINETIC RESOURCES	<p>MODULE I: BASIC CONCEPTS OF CINEGÉTICAL MANAGEMENT MODULE II: TECHNIQUES FOR IMPROVING THE CONDITIONS OF REPRODUCTION AND CREATION MODULE III: IMPROVEMENT TECHNIQUES COND. OF SHELTER AND FOOD MODULE IV: SUSTAINABLE APPROVAL METHODS MODULE V: HUNTING IN THE CONTEXT OF RURAL DEVELOPMENT</p>
BLOCK 2: AQUACULTURE	<p>MODULE I. INTRODUCTION TO AQUACULTURE IN THE FLUVIAL HABITAT: MODULE II. AQUACULTURE AND FLUVIAN FISHERIES: MODULE III. FISH SPECIES: -SMALMIDS MODULE IV. FISH SPECIES: -CYPRINESIS: MODULE V. FISH SPECIES: -MOTHER SPECIES: MODULE VI.- METHODS OF MANAGEMENT MODULE VII.- METHODS OF USE MODULE VIII.-CONTINESAL WATER MANAGEMENT PROJECTS</p>

Planning

	Class hours	Hours outside the classroom	Total hours
Autonomous practices through ICT	120	0	120
Multiple choice tests	30	0	30

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

Methodologies

	Description
Autonomous practices through ICT	<p>It will be the development of the subject through the new ICT known as tele-training or e-learning, not limited to mere written expositions, but making them of a sharply participatory nature with the development of animations and simulations, in complex situations, that oblige the Student to interact with the subject matter. All the competences are treated and developed in the autonomous practical sessions through ICT as well as in the master sessions and the field trips.</p>

Personalized attention

Methodologies	Description
Autonomous practices through ICT	
Tests	Description

Assessment			
	Description	Qualification Evaluated	Competences
Autonomous practices through ICT	(*)Saídas de campo, traballos relacionados coa xestión piscícola e cinexética.	50	CG25 CG35 CG36 CG37 CG38 CG39 CG40 CG41 CE33 CT1 CT2 CT3 CT5 CT6 CT7 CT8 CT9 CT11 CT13 CT14 CT15 CT16 CT20
Multiple choice tests	(*)Diferentes preguntas sobre a materia vista nas sesións maxistras así como nas prácticas realizadas.	50	CE33

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

- ARRIGNON, J., Ecología y piscicultura de aguas dulces., (1979), Ediciones Mundi-Prensa, Madrid
- BARNABE, G, Acuicultura, 1989, Ed. Omega, Barcelona,
- BEVERIDGE, M., Acuicultura en jaulas, 1984, Ed. Acribia S.A
- BLANCO CACHAFEIRO, M. C, La trucha. Cría industrial., 1995, Mundi-Prensa, Madrid
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- DRUMOND, S., Cría de la trucha, 1988, Ed. Acribia, Zaragoza
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- GARCÍA-BADELL, J. J, Tecnología de las explotaciones piscícolas, 1985, Mundi-Prensa, Madrid
- GARCÍA DE JALÓN, D.; G. PRIETO y F. HERRERUELA, Peces ibéricos de agua dulce, 1989, Agrogías Mundi-Prensa, Madrid
- GUEGUEN, J. y PROUZET, Le saumon atlantique, 1994), Editions de L`IFREMER, Plouzané (France)
- HUET, M., Tratado de piscicultura, 1983, Mundi-Prensa, Madrid
- LOBÓN CERVIÁ, JAVIER, Dinámica de poblaciones de peces en ríos. Pesca eléctrica y métodos de capturas sucesivas en la estima de abundancias, 1991, Museo Nacional de Ciencias Naturales, CSIC,
- MUUS, B. & P. DAHLSTÖM, Los peces de agua dulce de España y de Europa; pesca, biología, importancia económica, 1970, Ed. OMEGA, S.A., Barcelona
- ROBERTS, R. J, Patología de los peces, 1981, Mundi-Prensa, Madrid
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SHEPHERD, J. C. & BROMAGE, R. N., Cultivo intensivo de peces., 2008, Ed. Acribia, S.A

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ALVARADO CORRALES, E. et al., Manual de Ordenación y Gestión Cinegética., 2001, Ed. Institución Ferial de Badajoz

SÁNCHEZ GASCÓN, A, Guardas de Caza: Legislación, 1996, Ed. Exlibris Ediciones, S.L

AUDEBERT, Tristan (Henri Béraud), La caza de la becada, 1997, Ed. Clan, Bilbao

BERTON, Jean, El mundo de las armas de caza, 2003, Ed. Clan, Barcelona

ALBENTOS, Marqués de, Arte general de cacerías y monterías., Ed. Clan, Sevilla, 2004.

BOZA, Moisés D, El trampeo y demás artes de caza tradicionales en la península Ibérica., 2003, Ed. Clan, Barcelona

Recommendations

Subjects that continue the syllabus

Projects/P03G370V01503

Physical planning and land management/P03G370V01701

Subjects that are recommended to be taken simultaneously

Forestry Ecology/P03G370V01402

Forest exploitation/P03G370V01601

Forestry hydrology/P03G370V01604

Subjects that it is recommended to have taken before

Hydraulics/P03G370V01404

Forest entomology and Zoology/P03G370V01305

IDENTIFYING DATA**Pathology and forest pests**

Subject	Pathology and forest pests			
Code	P03G370V01703			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	1st
Teaching language				
Department				
Coordinator	López de Silanes Vázquez, María Eugenia			
Lecturers	López de Silanes Vázquez, María Eugenia			
E-mail	esilanes@uvigo.es			
Web	http://http://webs.uvigo/esilanes/index.htm			
General description	(*)Comprender e aprender os conceptos básicos e a terminoloxía específica, para coñecer e diferenciar as enfermidades e pragas máis importantes, resaltando as que afectan ao ámbito forestal do noso territorio			

Competencies

Code		Typology
CG1	CG-01: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Biolóxicos.	- know
CG11	CG-11: Coñecemento dos procesos de degradación que afectan aos sistemas e recursos forestais: pragas.	- know
CG16	CG-16: Capacidade para o uso das técnicas de conservación da biodiversidade.	- Know How
CE34	(*)CE-34: Capacidade para coñecer, comprender e utilizar os principios de: enfermidades e pragas forestais.	- know - Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
(*)	CG1 CG11 CG16 CE34 CT6 CT20
New	CG1 CG11 CG16 CE34 CT6 CT20

Contents

Topic
Topic 1. Concept of Disease and Phytopathology. Classification of diseases.
Topic 2. Symptomatology of diseases. Types of symptoms.
Topic 3. Concept of pathogen and parasite. Stages of disease development.
Topic 4. Types of attacks from pathogens to plants.
Topic 5. How plants are defended by pathogens.

Topic 6. Means of control against pathogens: preventive and curative. Control methods: regulators (legislative), cultural, biological, physical and chemical.

Topic 7. Generalities of fungi. Important groups in Forest Pathology.

Topic 8. Rotting, drowning or damping-off in seedbeds.

Topic 9. Diseases of leaves in conifers
 9.1 Red band (*Mycosphaerella pini* and *M. dearnessii*)
 9.2 Blight of pine needles (*Lophodermium pinastri*).
 9.3 Mention of *Meloderma desmazieri*

Topic 10. Diseases of leaves in angiosperms
 10.1 Oidium or odium of the oak, *Erysiphe alphitoides*.
 10.2 Spotting of eucalyptus leaves, *Mycosphaerella* sp.
 10.3 Gray mold, *Botryotinia fuckeliana* = *Botrytis cinerea*

Topic 11. Diseases of trunk and branches of conifers.
 11.1 Cancers: *Sphaerosopsis sapinea* = *Granulodiplodia sapinea*; *Nectria cinnabarina* = *Tubercularia vulgaris*.
 11.2 Royas: *Cronartium flaccidum* or white rust of pine.
 11.3 Resinous pineal cancer *Gibberella circinata* = *Fusarium circinatum*.

Topic 12. Diseases of trunk and branches in Angiosperms.
 12.1 Chestnut brown, *Cryphonectria parasitica*.
 12.2 Carbon or carbonaceous disease, *Biscogniauxia mediterranea* = *Hypoxyton mediterraneum*.
 12.3 Grafiosis of elm. *Ophiostoma ulmi*, *O. novo-ulmi*

Topic 13. Root diseases.
 13.1 Chestnut ink, *Phytophthora cinnamomi*.
 13.2 In conifers, *Heterobasidion annosum*.
 13.3 Pathogen of numerous species. *Armillaria* sp.

Topic 14. Diseases caused by nematode viruses and bacteria.
 14.1 Pine wood nematode, *Bursaphelenchus xylophilus*

Topic 15. General ideas about insects. Classification: Apterygota. Exopterygota. Endopterygota.

Topic 16. Biological balance and plague phenomenon.

Topic 17. Methods of pest control.

Topic 18. Conifer pests
 18.1 Defoliator insects: *Thaumetopoea pityocampa*.
 18.2 Insect borers, most representative species: scythes (*Ips sexdentatus*) cerambícidos (*Monochamus galloprovincialis*), etc.
 18.3 Most representative taxa of sucking insects.

Topic 19. Eucalyptus pests.
 19.1 Deflating insects, *Gonipterus scutellatus*
 19.2 Insect borers, *Phoracantha semipunctata*.
 19.3 Sucking insects, *Ctenarytaina spatulata*

Topic 20. Review some of the most representative pests of garden trees. Mention of the plagues of the chestnut fruit.

(*) Tema 21. Mención de algunhas pragas en frondosas autoctonas.
 (*)21.1 Insectos defoliadores
 21.2 Insectos perforadores
 21.3 Insectos chupadores

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	30	70	100
Laboratory practises	20	20	40
Outdoor study / field practices	10	0	10

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

Methodologies

	Description
Master Session	Exposition, by the teacher, of the contents of the subject, theoretical bases and / or guidelines of a work to be developed by the students
Laboratory practises	Application of the knowledge of the subject. Learning and handling of basic techniques.

Outdoor study / field practices	Realization of exits to forest ecosystems and / or visits to research centers or companies related to the subject studied.
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Personalized attention

Methodologies	Description
Laboratory practises	Students will be guided to choose the right literature for the full or to make their own subjects. To help solve problems and concerns that students encounter in laboratories.
Master Session	Provide tools they need to solve for themselves the question to appear after they have studied the topics dealt with in the opening sessions in the tutoring hours practices. In, indicate the appropriate literature so that they can resolve the question doubts.

Assessment

	Description	Qualification	Evaluated Competences
Laboratory practises	(*)Avaliación continua das actividades desenvolvidas nas prácticas, así como da memoria ou entrega de exemplares de patoloxía de plantas e/ou un exame práctico que o alumnado deben realizar ao final do curso.	30	CG11 CG16 CE34 CT6 CT20
Master Session	(*)Exame escrito.- O alumnado debe responder a diferentes cuestións para demostrar os seus coñecementos sobre conceptos teóricos e cuestións prácticas da materia. Constará de preguntas de resposta curta e outras de resposta longa. Exposición por parte do alumnado dun dos temas do programa.	70	CG1 CG11 CE34 CT6 CT20

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

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ANDRÉS, M. FE DE, Patógenos de plantas descritos en España., Ministerio de Agricultura, Pesca y Alimentación., 2000

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CARRERO, J.M., Lucha integrada contra las plagas agrícolas y forestales, Mundi-Prensa., 1996

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JARVIS W.R, Control de las enfermedades en cultivos de invernadero, Mundi-Prensa, 1998

LIÑÁN , C, Vademecum de productos fitosanitarios y nutricionales., Mundi Prensa, 2000-2014

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Recommendations

Subjects that it is recommended to have taken before

Biology: Plant Biology/P03G370V01201

Botany/P03G370V01303

Forestry Ecology/P03G370V01402

Forestry/P03G370V01401

Forest entomology and Zoology/P03G370V01305

IDENTIFYING DATA**Forest and pasture management**

Subject	Forest and pasture management			
Code	P03G370V01704			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	1st
Teaching language				
Department				
Coordinator	Martínez Chamorro, Enrique José			
Lecturers	Martínez Chamorro, Enrique José			
E-mail	enrique.martinez.chamorro@gmail.com			
Web	http://http://webs.uvigo.es/mchamorro/			
General description	(*)Coñecer as bases ecolóxicas que rexen o funcionamento natural dos diversos sistemas pastorais e silvopastorais. Analizar a estrutura, manexo e xestión dos devanditos sistemas silvopastorais			

Competencies

Code		Typology
CG1	CG-01: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Biolóxicos.	- know - Know How
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG7	CG-07: Capacidade para identificar os diferentes elementos: elementos físicos.	- know - Know How
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG14	CG-14: Capacidade para o uso das técnicas de protección do medio forestal.	- Know How
CG19	CG-19: Capacidade para aplicar as técnicas de xestión ambiental.	- Know How
CG22	CG-22: Capacidade para aplicar e desenvolver as técnicas selvícolas e de manexo de todo tipo de sistemas forestais, parques e áreas recreativas.	- know - Know How
CG23	CG-23: Capacidade para aplicar e desenvolver as técnicas de aproveitamento de produtos forestais madeirables e non madeirables.	- know - Know How
CG33	CG-33: Capacidade para caracterizar as propiedades anatómicas e tecnolóxicas das materias primas forestais non madeirables así como das tecnoloxías e industrias destas materias primas.	- know - Know How
CE8	(*)CE-08: Coñecemento das bases e fundamentos biolóxicos do ámbito vexetal na enxeñaría.	- know
CE12	(*)CE-12: Capacidade para coñecer, comprender e utilizar os principios de: ecoloxía forestal	- know - Know How
CE15	(*)CE-15: Capacidade para coñecer, comprender e utilizar os principios de: botánica forestal.	- know - Know How
CE17	(*)CE-17: Capacidade para coñecer, comprender e utilizar os principios de: silvicultura.	- know - Know How
CE27	(*)CE-27: Capacidade para coñecer, comprender e utilizar os principios de: prevención e loita contra incendios forestais.	- know - Know How
CE35		- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- know - Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT10	(*)CBP 3: Recoñecer a diversidade e a multiculturalidade.	- know

Learning outcomes

Learning outcomes	Competences
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(*)-Coñocer as bases ecoloxicas das principais gramíneas e leguminosas do norte peninsular
 - Funcionamento natural dos diversos sistemas pastorais e silvopastorais
 - Manexo e xestión dos devanditos sistemas silvopastorais

CG1
 CG6
 CG7
 CG8
 CG14
 CG19
 CG22
 CG23
 CG33
 CE8
 CE12
 CE15
 CE17
 CE27
 CE35
 CT1
 CT2
 CT7
 CT10

New

Contents

Topic

INTRODUCTION TO PASTORING SYSTEMS. CONDITIONING AND IMPROVEMENT OF PASTURES	SUBJECT 1: General silvipastoral concepts. Basic pastoral management. SUBJECT 2: The vegetal component of the grazing system. Pastoral classification systems SUBJECT 3: Packaging and improvement of pastures. I Rozas. The burning. Enclosures. SUBJECT 4: Packaging and improved pastures II: Limestone amendments. Fertilization. Irrigation and drainage.
PASTURE USE. PASCICOLOGICAL SPECIES	SUBJECT 5: Basic concepts: grazing. Segá. Nutritional value: Quantity. Bromatoloxico value and palatability. SUBJECT 6: Management of grazing systems and livestock. The quantification of production and storage SUBJECT 7: Control of livestock density. Grazing and control of plant fuels. Masses of trees and pastures. Ecological effects. SUBJECT 8: Classification of silvipastoral systems. SUBJECT 9: Main pasture species.
THEME OF LABORATORY PRACTICES	SUBJECT 1P: recognition of plant species of the main genera of grasses and legumes of pastoral interest. SUBJECT 2P: Description of species of pastoral interest using transparencies and slides. SUBJECT 3P: Classification of plant species with taxonomic keys.

Planning

	Class hours	Hours outside the classroom	Total hours
Classroom work	25	10	35
Outdoor study / field practices	8	8	16
Laboratory practises	21	10	31
Multiple choice tests	3	0	3
Troubleshooting and / or exercises	2	0	2
Jobs and projects	10	0	10

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

Methodologies	
	Description
Classroom work	1. Formulation and resolution of exercises on real situations. 2. Simulation of management over the territory. To make a herbarium with the main purpose of the herbarium is to serve to study the main grasses and legumes of our environment
Outdoor study / field practices	Collect and identify grasses and legumes.
Laboratory practises	Identify Grasses and legumes of silvopastoral interest

Personalized attention	
Methodologies	Description
Laboratory practises	
Classroom work	
Outdoor study / field practices	
Tests	
	Description
Multiple choice tests	
Jobs and projects	

Assessment			
	Description	Qualification Evaluated	Competences
Laboratory practises	(*) (*) Reconocemento de especies pascícolas	5	CG6 CG7 CG8 CG14 CG19 CG22 CG23 CG33 CE12 CE15 CE17 CE27 CE35 CT1 CT7 CT10
Classroom work	(*)(*) Confeción dun Herbario	10	CG1 CE8 CE12 CE15 CE35 CT1 CT2 CT7
Outdoor study / field practices	(*)(*) Reconocemento e identificación en campo de especies de interese pascícola	0	

Multiple choice tests	(*)Recoñocer os coñecementos adquiridos	60	CG1 CG6 CG7 CG8 CG14 CG19 CG22 CG23 CG33 CE8 CE12 CE15 CE17 CE27 CE35
Jobs and projects	(*)Realizar proxectos e exercicios de xestión basados en datos reais	25	CG1 CG6 CG7 CG14 CG19 CG22 CG23 CE12 CE15 CE17 CE27 CE35 CT1 CT2 CT7

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

SAN MIGUEL, A., Pastizales Naturales Españoles, E.T.S.I.Madrid.

RIGUEIRO,A., Pastoreo controlado en los bosques gallegos, El Campo:29-33

SAN MIGUEL, A, La dehesa Española, E.T.S.I.Madrid.

ETIENNE,M., Western European Silvopastoral Systems,

GONZALEZ HERNANDEZ,P, Estudio de las formaciones arboladas y arbustivas como base para su aprovechamiento cinegético, Tesis doctoral inédita, Universidad de Santiago

RIGUEIRO,A, La utilización del ganado en el monte arbolado gallego, un paso hacia el uso integral del monte, En:Estudios sobre prevención y efectos ecológicos de los incendios forestales,61-78, ICONA (MAPA).Madrid

MONTOYA, J. M., Pastoralismo Mediterráneo, ICONA Madrid

SILVA,F.J, Prácticas agroforestales en pinares y eucaliptales atlánticos, Congreso Forestal Español.Lourizán (Pontevedra).Po

KNOWLES,R.L. & CUTLER,T.R, . Integration of Forestry and Pastures in New Zealand, New Zealand Forest Service, Wellington

Recommendations

Subjects that continue the syllabus

Biology: Plant Biology/P03G370V01201

Forestry Ecology/P03G370V01402

Subjects that are recommended to be taken simultaneously

Forestry/P03G370V01401

Forest management/P03G370V01605

Subjects that it is recommended to have taken before

Botany/P03G370V01303

Edaphology/P03G370V01302

IDENTIFYING DATA**Wood preservation and drying technology**

Subject	Wood preservation and drying technology			
Code	P03G370V01705			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	1st
Teaching language				
Department				
Coordinator	González Prieto, Óscar			
Lecturers	González Prieto, Óscar			
E-mail	oscardprieto@uvigo.es			
Web	http://www.forestaes.uvigo.es			
General description	(*)Asignatura que trata las dos tecnologías básicas para el uso industrial de la madera			

Competencies

Code		Typology
CG32	CG-32: Capacidade para caracterizar as propiedades anatómicas e tecnolóxicas das materias primas forestais madeirables así como das tecnoloxías e industrias destas materias primas.	- know - Know How
CE31	(*)CE-31: Coñecementos para o cálculo e deseño de instalacións de carpintería. Secado, descortizado e trituración da madeira.	- know - Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- know - Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How

Learning outcomes

Learning outcomes	Competences
(*)Conocimientos para el cálculo y diseño de instalaciones de secado y tratamiento de la madera	CG32 CE31 CT1 CT2 CT6

New

Contents

Topic	
Wood drying technology	Physical principles of drying Natural drying Artificial drying Phases of artificial drying Predecaderos Drying tunnels Drying Chambers Drying of wood by special methods Defects caused by drying Programming of drying processes Design of dryers

Technology of wood conservation	Pathologies of wood	Natural wood durability and impregnability Types of wood use Protective products and application systems Protector application systems Treatments of wood different from the use of chemicals Wood treatment - sawmills, joinery and carpentry Technical report on pathology Constructive measures for the protection of wood Reinforcement of wooden structures
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Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	28	80	108
Troubleshooting and / or exercises	8	18	26
Outdoor study / field practices	4	6	10
Laboratory practises	2	0	2
Introductory activities	1	0	1
Short answer tests	2	0	2
Troubleshooting and / or exercises	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
Master Session	Exposition of objectives and contents and relevance of the same within the set of competences of the subject
Troubleshooting and / or exercises	Type and oral presentation problem solving seminars
Outdoor study / field practices	Explanation "in situ" of industrial processes of drying and conservation of wood
Laboratory practises	Explanation of the handling of dryers
Introductory activities	Presentation of the objectives and development of the subject

Personalized attention

Methodologies	Description
Troubleshooting and / or exercises	
Laboratory practises	

Assessment

	Description	Qualification	Evaluated Competences
Master Session	(*) Evaluación continua a través de la asistencia a las sesiones impartidas	20	CG32 CE31 CT1
Troubleshooting and / or exercises	(*) Evaluación continua a través de la asistencia a las clases prácticas impartidas	10	CG32 CE31 CT2 CT6
Outdoor study / field practices	(*) Presentación de una memoria de las visitas realizadas	5	CG32 CT1 CT2 CT6
Short answer tests	(*)Evaluación de la prueba de evaluación sobre los contenidos teóricos de la asignatura	45	CG32 CE31

Troubleshooting and / or exercises	(*)Evaluación de las pruebas de realización de ejercicios	20	CG32 CE31 CT1 CT2 CT6
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Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Subjects that continue the syllabus

Quality control and prevention of occupational hazards in the forestry industry/P03G370V01804

Subjects that are recommended to be taken simultaneously

Primary wood processing industries/P03G370V01706

Product development and innovation in the wood industry/P03G370V01708

Industrial organisation and processes in the wood industry/P03G370V01707

Subjects that it is recommended to have taken before

Wood technology/P03G370V01606

IDENTIFYING DATA**Primary wood processing industries**

Subject	Primary wood processing industries			
Code	P03G370V01706			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	1st
Teaching language				
Department				
Coordinator	Bartolome Mier, Javier			
Lecturers	Bartolome Mier, Javier			
E-mail	jbartolome@uvigo.es			
Web	http://www.forestales.uvigo.es			
General description	*Asignatura In which they study the technologies of manufacture of the basic products of forest origin: wood sawed and boards			

Competencies

Code		Typology
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG23	CG-23: Capacidade para aplicar e desenvolver as técnicas de aproveitamento de produtos forestais madeirables e non madeirables.	- know - Know How
CG32	CG-32: Capacidade para caracterizar as propiedades anatómicas e tecnolóxicas das materias primas forestais madeirables así como das tecnoloxías e industrias destas materias primas.	- know - Know How
CG33	CG-33: Capacidade para caracterizar as propiedades anatómicas e tecnolóxicas das materias primas forestais non madeirables así como das tecnoloxías e industrias destas materias primas.	- know - Know How
CG34	CG-34: Capacidade de organización e planificación de empresas e outras institucións, con coñecemento das disposicións legislativas que lles afectan e dos fundamentos do marketing e comercialización de produtos forestais.	- know - Know How
CE29	(*)CE-29: Capacidade para coñecer, comprender e utilizar os principios dos procesos de primeira transformación da madeira e os principios de: materias primas forestais non madeireiras; procesos industriais de produtos non madeireiros: cortiza, resina, aceites esenciais.	- know - Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT19	(*)CBS 7: Motivación pola calidade.	- Know be
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
Capacity to know, comprise and use the basic principles of the processes of first transformation of the wood, including the *descortezado, *trituration and carpentry and other forest prime matters no *madereras	CG8 CG23 CG32 CG33 CG34 CE29 CT6 CT19 CT20
New	

Contents

Topic	
Introduction to the subject.	Presentation of the sector of first transformation of the wood in Galicia, Spain and Europe

Technology of the sawed of the wood	Wooden section in roll Section of court of the trunk Section of manipulation of the wood sawed Machinery of sawed Systems of sawed of the wood Lines of processed
The cut of the wood	Characteristics of the tool Preparation and conservation of tools of court Parameters of court Definition of the tool of court
Manufacture of wooden sheet to the flat	Definition and use of the wooden sheet to the flat Process of manufacture of the wooden sheet to the flat
Manufacture of boards plywoods	Definition, properties and types of board plywood Process of manufacture of the board plywood
Manufacture of boards of particles and wooden fibres	Boards of particles. Properties, uses and process of manufacture Boards of hard fibre. Properties, uses and process of manufacture Boards of fibre of half density. Properties, uses and process of manufacture
Properties and employment of the main wooden species of industrial use	Physical characteristics, mechanical and applications of the main wooden species of conifers, leafy and tropical

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	34	87	121
Troubleshooting and / or exercises	5	13	18
Outdoor study / field practices	4	2	6
Introductory activities	1	0	1
Short answer tests	1	0	1
Troubleshooting and / or exercises	1	0	1
Reports / memories of practice	0	2	2

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

Methodologies

	Description
Master Session	Exhibition of aims and contents and importance of the same inside the group of the competitions of the subject.
Troubleshooting and / or exercises	Seminars of resolution of problems type and oral presentation
Outdoor study / field practices	Explanation "in situ" of industrial processes in factories of first transformation of the wood
Introductory activities	Exhibition of the aims and development of the subject.

Personalized attention

Assessment

	Description	Qualification	Evaluated Competences
Introductory activities		0	
Master Session	Continuous evaluation through the assistance to the classes of classroom	7	CG8 CG23 CG32 CG33 CG34 CE29

Troubleshooting and / or exercises	Continuous evaluation through the assistance to the classes of resolution of problems	3	CG8 CG23 CG32 CG33 CG34 CE29 CT6
Outdoor study / field practices	Presentation of a memory of the visits realised	10	CG8 CG23 CG32 CG33 CE29 CT6 CT19 CT20
Short answer tests	Evaluation of the theoretical knowledges through proofs of short answer	60	CG8 CG23 CG32 CG33 CG34 CE29
Troubleshooting and / or exercises	Evaluation of the knowledges of the student, through proof written, for the resolution of typical problems of the industry of first transformation of the wood	20	CG8 CG23 CE29 CT6
Reports / memories of practice		0	

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Subjects that continue the syllabus

Quality control and prevention of occupational hazards in the forestry industry/P03G370V01804

Subjects that are recommended to be taken simultaneously

Product development and innovation in the wood industry/P03G370V01708

Industrial organisation and processes in the wood industry/P03G370V01707

Wood preservation and drying technology/P03G370V01705

Subjects that it is recommended to have taken before

Wood technology/P03G370V01606

IDENTIFYING DATA**Industrial organisation and processes in the wood industry**

Subject	Industrial organisation and processes in the wood industry			
Code	P03G370V01707			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish			
Department				
Coordinator	González Prieto, Óscar			
Lecturers	García-Pintos Escuder, Adela González Prieto, Óscar			
E-mail	oscargprieto@uvigo.es			
Web	http://www.forestales.uvigo.es			
General description	(*)Materia que trata sobre los procesos industriales de transformación de la madera, especialmente los que se llevan a cabo en la fabricación de los productos finales, así como las técnicas de gestión y mejora continua de la producción.			

Competencies

Code		Typology
CB1	(*)Que os estudantes posúan e comprendan coñecementos que aporten unha base ou oportunidade de ser orixinal no desenvolvemento e / ou aplicación de ideas, a miúdo nun contexto de investigación	- know - Know How - Know be
CB2	Que los estudiantes sepan aplicar conocimientos adquiridos y su capacidad de resolución de problemas en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio	- know - Know How - Know be
CG32	CG-32: Capacidade para caracterizar as propiedades anatómicas e tecnolóxicas das materias primas forestais madeirables así como das tecnoloxías e industrias destas materias primas.	- know - Know How
CG33	CG-33: Capacidade para caracterizar as propiedades anatómicas e tecnolóxicas das materias primas forestais non madeirables así como das tecnoloxías e industrias destas materias primas.	- know - Know How
CG34	CG-34: Capacidade de organización e planificación de empresas e outras institucións, con coñecemento das disposicións legislativas que lles afectan e dos fundamentos do marketing e comercialización de produtos forestais.	- know - Know How
CG42	CG-42: Capacidade para entender, interpretar e adoptar os avances científicos no campo forestal, para desenvolver e transferir tecnoloxía e para traballar nun medio multilingüe e multidisciplinar.	- know - Know How
CE30	(*)CE-30: Capacidade para coñecer, comprender e utilizar os principios de: coñecemento dos principios básicos dos procesos de segunda transformación da madeira.	- know - Know How - Know be
CE31	(*)CE-31: Coñecementos para o cálculo e deseño de instalacións de carpintería. Secado, descortizado e trituración da madeira.	- know - Know How - Know be
CT1	(*)CBI 1: Capacidade de análise e síntese.	- know - Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- know - Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How
CT14	(*)CBS 2: Adaptación a novas situacións.	- Know be
CT19	(*)CBS 7: Motivación pola calidade.	- Know be

Learning outcomes

Learning outcomes	Competences
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(*)Capacidad para conocer, comprender y utilizar los principios básicos de la organización industrial y los procesos de segunda transformación de la madera y del cálculo y diseño de instalaciones de carpintería y mueble

CB1
CB2
CG32
CG33
CG34
CG42
CE30
CE31
CT1
CT2
CT13
CT14
CT19

Contents

Topic	
The sector of second transformation of the wood	The carpentry and furniture industry in: <ul style="list-style-type: none"> · Galicia · Spain · Europe
Industrial operations on wood and boards Mechanization of wood and boards	Adhesives and gluing techniques in the wood industry Application of edges on boards Application of decorative surfaces on boards Sanding practices in carpentry and furniture Finishing technology on wood and boards
Basic principles and production management tools	Basic concepts Tools for supply chain management, purchasing and inventory Mathematical tools and models for the optimization of production
Basic principles and tools for continuous improvement in the organization of industrial production	Lean management basics and production excellence Application of Lean management to the wood industry Other tools: JIT, six-sigma

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	17	44	61
Tutored works	7	20	27
Outdoor study / field practices	8	10	18
Troubleshooting and / or exercises	11	30	41
Introductory activities	1	0	1
Short answer tests	2	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
Master Session	Structured exposition of objectives, theoretical contents and exemplifications of the subjects and sub-themes that form the program of the subject
Tutored works	Resolution of small practical exercises that accompany a theoretical explanation. Seminars of approach and resolution of type problems with oral presentation
Outdoor study / field practices	Explanation "in situ" of the organization and industrial processes in the carpentry and furniture industries
Troubleshooting and / or exercises	Active participation in the resolution of problems and / or exercises
Introductory activities	Introduction to the objectives and development of the subject

Personalized attention

Methodologies	Description
Tutored works	The tutoring hours will be indicated at the beginning of the course
Troubleshooting and / or exercises	The tutoring hours will be indicated at the beginning of the course

Assessment			
	Description	Qualification	Evaluated Competences
Master Session	(*)Participación activa no debate que se expoña na aula sobre os conceptos teóricos	10	CE30 CE31
Tutored works	(*)Participación activa nos seminarios de resolución de exercicios e de casos/análises de situacións, con críticas construtivas ás resolucións doutros compañeiros e entrega en tempo e forma dos traballos encomendados	5	CE30 CE31
Outdoor study / field practices	(*)Presentación dunha memoria das visitas realizadas	5	CE30 CE31
Short answer tests	(*)Proba escrita sobre os contidos teóricos e prácticos da materia	80	CE30 CE31

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Subjects that are recommended to be taken simultaneously

Primary wood processing industries/P03G370V01706

Product development and innovation in the wood industry/P03G370V01708

Subjects that it is recommended to have taken before

Wood technology/P03G370V01606

IDENTIFYING DATA

Product development and innovation in the wood industry

Subject	Product development and innovation in the wood industry			
Code	P03G370V01708			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Bartolome Mier, Javier			
Lecturers	Bartolome Mier, Javier García-Pintos Escuder, Adela			
E-mail	jbartolome@uvigo.es			
Web	http://www.forestaes.uvigo.es			
General description	Matter that treats on the industrial processes of transformation of the wood, especially those that carry out in the manufacture of the final products, as well as the technicians of management and continuous improvement of the production			

Competencies

Code	Typology
CE31 (*)CE-31: Coñecementos para o cálculo e deseño de instalacións de carpintería. Secado, descortizado e trituración da madeira.	- know
CT2 (*)CBI 2: Capacidade de organización e planificación.	- Know How
CT18 (*)CBS 6: Iniciativa e espírito emprendedor.	- Know be
CT19 (*)CBS 7: Motivación pola calidade.	- Know be

Learning outcomes

Learning outcomes	Competences
Knowledges for the calculation and design of installations of carpentry, dried, *descortizado and *trituración of the wood	CE31 CT2
The relation between competitions and results, and the weight of each competition inside the matter show in the pdf attach.	CT18 CT19
http://forestaes.uvigo.es/sites/default/files/38%20Innovacion.Pdf#*overlay-*context=is/*content/competitions-and-resulted-of-learning-by-matter	

Contents

Topic	
1.- Material technified wooden	1.1.Tables derived from wood 1.2 Laminated wood sections 1.3 Microlaminated wood (LVL) 1.4 Reconstituted wood with strips (PSL) 1.5 Wood reconstituted with chips (LSL) 1.6 Reconstituted wood with small chips (OSL) 1.7 Plastic Wood
2.- Wooden components	2.1 Fences and precercations 2.2 Flashing 2.3 Decorative moldings 2.4 Turned timber 2.5. Wood bent 2.6 Rolled profiles
3.- Hardware	3.1 Legs, feet and support elements- leveling. 3.2 Joining and assembly elements. 3.3 Hinges. 3.4 Guiding systems. 3.5 Installation and assembly elements. 3.6 Locks and closures

4.-Coatings of boards and wooden singings	<ul style="list-style-type: none"> 4.1 Coverings of edges. <ul style="list-style-type: none"> 4.1.1 Based on solid wood battens. 4.1.2 Based on wood veneers. 4.1.3 The base of PVC sheets. 4.1.4 Decorative paper base. 4.2.- Coverings of boards. <ul style="list-style-type: none"> 4.2.1 Made of sheet metal. 4.2.2 A base of impregnated papers. 4.2.3 Laminates. 4.2.4 Lacquered.
5.- Finished in carpentry and pieces of furniture	<ul style="list-style-type: none"> 5.1 Introduction. 5.2 Classification of finishes. <ul style="list-style-type: none"> 5.2.1 By the function of the varnish. 5.2.2 For the chemical composition of the varnish. 5.3 Components of a finish. <ul style="list-style-type: none"> 5.3.1 Solvents. 5.3.2 Resins. 5.3.3 Dyes and additives. 5.3.4 Loads. 5.4 Varnishes dried uv
6.- Wooden doors	<ul style="list-style-type: none"> 6.1 Introduction. 6.2 Classification of the doors. <ul style="list-style-type: none"> 6.2.1 By his constitution. 6.2.2 By the appearance of his faces. 6.2.3 By the form of the singing. 6.2.4 By the appearance of the singing. 6.3 Measures and tolerances of a door. 6.4 Characteristics of the wood. 6.5 Doors in function of his constitution <ul style="list-style-type: none"> 6.5.1 Doors to the flat. 6.5.2 Doors of carpentry. 6.5.3 doors of carpentry in relief. 6.6 special Doors <ul style="list-style-type: none"> 6.6.1 Doors to resistant to the fire. 6.6.2 acoustic Doors. 6.6.3 Doors of security.
7.- Wooden windows	<ul style="list-style-type: none"> 7.1 Introduction. 7.2 Elements that constitute a window. <ul style="list-style-type: none"> 7.2.1 Elements of the window recess. 7.2.2 Window elements. 7.3 Characteristics of a wooden window. <ul style="list-style-type: none"> 7.3.1 Air permeability. 7.3.2 Resistance to wind. 7.3.3 Water tightness. 7.3.4 Glazing.
8.- Wooden floors	<ul style="list-style-type: none"> 8.1 Deckings 8.2 Pallets 8.3 Lamparquet 8.4 Multi-layer parquet 8.5 Panels <ul style="list-style-type: none"> 8.5.1 Inlaid parquet 8.5.2 Industrial Parquet 8.5.3 Panels of historical designs 8.5.4 Multilayer panels 8.6 Lingering 8.7 Recessed panel flooring 8.8 laminated floors 8.9 Plastic flooring (pwc)
9.- Wooden stairs	<ul style="list-style-type: none"> 9.1 Introduction 9.2 Definitions 9.3 Typology of stairs <ul style="list-style-type: none"> 9.3.1 Structural Typology 9.3.2 Typology by path 9.4 Technical aspects in the design of a ladder

10.- Ergonomics and piece of furniture	10.1 General concepts 10.2 Scientific bases in ergonomics 10.3 Implications in furniture design of the sedentary stance. 10.4 Anthropometric tables.
11.- Modular pieces of furniture	11.1 General concepts 11.2 Modular furniture 11.3 Components of modular furniture 11.4 Exploded view of modular furniture
12.- Solid wood furniture	12.1 General concepts 12.2 Modular furniture 12.3 Components of modular furniture 12.4 Exploded view of modular furniture
13.- Attached furniture and others	13.1 General concepts 13.2 Modular furniture 13.3 Components of modular furniture 13.4 Exploded view of modular furniture
14.- Introduction to the innovation and new products	14.1 basic Concepts on innovation 14.2 The management of the innovation and the R&D 14.3 Types of innovation
15.- Technical of work in team and creativity	15.1 Creativity and processes 15.2 Technicians for the creation and management of innovation of products
16.- Phases of a project of development of new products	16.1 Phases of a project of development of new products

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	23	70	93
Laboratory practises	4	6	10
Autonomous practices through ICT	6	10	16
Classroom work	11	18	29
Short answer tests	2	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
Master Session	Explanation of theoretical concepts and exemplifications
Laboratory practises	Activities of application of the knowledges to concrete situations and of acquisition of basic skills and procedural related with the matter object of study. It will develop in a special space with the suitable equipment
Autonomous practices through ICT	Resolution of practical cases of design of modular pieces of furniture
Classroom work	The student will realise a project of development of a new product so much in the classroom as of autonomous way under the guidelines and the supervision of the professor.

Personalized attention

Methodologies	Description
Classroom work	The tutorials will fix to principle of the semester.
Autonomous practices through ICT	The tutorials will fix to principle of the semester.

Assessment

	Description	Qualification	Evaluated Competences
Master Session	Assistance and active participation in the sessions *magistrales	10	CE31
Laboratory practises	Activities of application of the knowledges to concrete situations and of acquisition of basic skills and *procedimentales related with the matter object of study.	5	CE31 CT2 CT18 CT19

Classroom work	The student will realise a project of development of a new product	50	CE31 CT2 CT18 CT19
Short answer tests	Proof written to final of course for the evaluation of the competitions purchased along the course	35	CE31

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Subjects that continue the syllabus

Environmental management/P03G370V01608

Quality control and prevention of occupational hazards in the forestry industry/P03G370V01804

Subjects that are recommended to be taken simultaneously

Quality control and prevention of occupational hazards in the forestry industry/P03G370V01804

Subjects that it is recommended to have taken before

Basics of business economics/P03G370V01104

Wood technology/P03G370V01606

Wood preservation and drying technology/P03G370V01705

Other comments

The student has to give of high and keep a *ficha up to date in the telematic platform of support to the teaching (*FAITIC). They will have to request the high to the start of the course to access to the on-line contents of said matter, available in the web: <http://faitic.uvigo.es>, previous to the effective registration.

IDENTIFYING DATA**Management of protected areas and biodiversity**

Subject	Management of protected areas and biodiversity			
Code	P03G370V01801			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	2nd
Teaching language				
Department				
Coordinator	Cordero Rivera, Adolfo			
Lecturers	Cordero Rivera, Adolfo Rivas Torres, Anais			
E-mail	adolfo.cordero@uvigo.es			
Web	http://ecoevo.uvigo.es			
General description	(*)Introdución aos principios da Bioloxía da Conservación aplicados á Xestión de Espazos protexidos e Conservación da Biodiversidade			

Competencies

Code		Typology
CG1	CG-01: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Biolóxicos.	- know - Know How
CG2	CG-02: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Físicos.	
CG6	CG-06: Capacidade para identificar os diferentes elementos: elementos bióticos.	- know - Know How
CG7	CG-07: Capacidade para identificar os diferentes elementos: elementos físicos.	
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG9	CG-09: Capacidade para analizar a estrutura e función ecolóxica dos sistemas e recursos forestais, incluíndo as paisaxes.	- Know How
CG16	CG-16: Capacidade para o uso das técnicas de conservación da biodiversidade.	- Know How
CG24	CG-24: Capacidade para resolver os problemas técnicos derivados da xestión dos espazos naturais.	- Know How
CE12	(*)CE-12: Capacidade para coñecer, comprender e utilizar os principios de: ecoloxía forestal	
CE36	(*)CE-36: Capacidade para resolver problemas técnicos derivados da xestión de espazos naturais. Conservación da biodiversidade.	- Know How
CT1	(*)CBI 1: Capacidade de análise e síntese.	- Know How
CT2	(*)CBI 2: Capacidade de organización e planificación.	- Know How
CT5	(*)CBI 5: Capacidade de xestión da información.	
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	
CT15	(*)CBS 3: Creatividade.	- Know be
CT20	(*)CBS 8: Sensibilidade cara a temas ambientais.	- Know be

Learning outcomes

Learning outcomes	Competences
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(*)

CG1
CG2
CG6
CG7
CG8
CG9
CG16
CG24
CE12
CE36
CT1
CT2
CT5
CT7
CT11
CT15
CT20

New

Contents

Topic

1. The science of conservation.	The origins and brief history of conservationist movements. Principles of conservation biology. Ecology and Environment. Importance of science in conservation.
2. Present the ecological values and functions of biodiversity.	Genetic diversity, and by ecosystem: the concept of biodiversity. Why should you keep the species? The intrinsic value of the species and their conservation status. The instrumental values and rarity of the species. The values of ecosystems.
3. Biodiversity and stability.	The concept of stability. The diversity-stability debate (a history of controversy, current studies, compartmentalization, diversity and global change, implications for conservation biology). Recoil.
4. Ecological principles in the exploitation of natural resources.	Optimum performance concept. Principles for the exploitation of resources. Genetic changes in exploited populations. The exploitation of forests. Forest certification (FSC, PEFC).
5. Extinction	Number of species that inhabit the planet. The causes of the rarity of the species. IUCN classification. Estimation of extinction rate. Processes and causes of extinction. Degradation and destruction of habitats. Metapoboacional dynamic. Analysis of viability of populations (PVA).
6. Management of species and populations.	Addresses of the units. In situ and ex situ conservation. Scarcity of resources. Control of threats. Transfers and artificial breeding. Role of zoos, botanical gardens and museums. Importance of ethology in conservation. Case study: the example of the black ferret pin.
7. E-mail management and restoration of ecosystems	. Principles of ecosystem management. Modified ecosystems (logging, agricultural ecosystems, aquatic ecosystems). Restoration of ecosystems.
8. Social factors in conservation.	Description of the values. Qualification priorities. Cultural changes. Environmental education. Galician strategy of environmental education.
9. The economics of conservation.	Economic valuation of biodiversity (types of sustainability, decision models in the ecological economy, the value of biodiversity). Cost of maintenance (method of cost of the trips, the method of revealed preferences, an economic and ecological perspective of market). The tragedy of communal property.
10. Political action and conservation.	International organizations (IUCN MAB program). Government agencies: The Spanish strategy for sustainable development. Spanish strategy for the conservation of biodiversity. Non-governmental organizations (NGOs). Companies and individuals. Scientific research, policy and conservation. Ecologism as a political ideology.
11. Reserves and protected parks.	Objectives of the creation of reserves (the problem of fragmentation). Representation of biodiversity. The main features of design reservations: size, dynamic context, spatial, connectivity, buffer zones. Protected natural areas of Galicia.
12. Conservation legislation	Biodiversity Agreements (Berne, Ramsar, Washington (CITES), Bonn Biodiversity (Rio de Janeiro) European legislation (Birds Directive, Habitats Directive) State legislation (Law 42/2007 on Natural Heritage, Decree 139 / 2011 catalog species in danger Decree 1628/2011 Catalog of invasive species) Legislation of Galicia: .. of Galician law of conservation of nature.

13. Management plans for endangered species. Guidelines, objectives and feasibility. Examples: the management plan for the European turtle (*Emys orbicularis*) in Galicia; Plan of control of liberal populations (*Odonata*) of European interest; Reproductive biology and Camariña management (*Corema album*) in the Cíes Islands.

Practice 1. Design of Reservations: Testing the species-area relationship.	(*)
Practice 2. Taxonomic principles and characteristics of communities. Its use in the decision-making process on conservation.	(*)
Practice 3. Contingent assessment: Survey on social attitudes against conservation.	(*)
Practice 4. Analysis of the viability of populations using the vortex program.	(*)
Practice 5. Field output. Visit to the Center of Zooxenética Resources of Galicia.	Study of two systems of conservation of xermoplasma of autochthonous cattle breeds.
Practice 6. Field Output. Visit to the Natural Park of Fragas do Eume.	Contact with the actual treatment of the protease area, with its specific characteristics and problems.
Practice 7. Field output. Visit to the National Park of the Atlantic Islands of Galicia.	Given the peculiarities of the Park, with its insularity, the visit will be to the reception center of visitors in Vigo, if the climatic and climatic conditions so advise.

Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	30	52.5	82.5
Outdoor study / field practices	11	16.5	27.5
Classroom work	5	10	15
Practice in computer rooms	4	4	8
Short answer tests	2	0	2
Jobs and projects	5	10	15

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

Methodologies

	Description
Master Session	Presentation by the professor of the most important concepts of the subject
Outdoor study / field practices	Understanding key concepts through study outings.
Classroom work	work and exposure practical classroom analysis methodologies.
Practice in computer rooms	study key concepts through computer simulations.

Personalized attention

Tests	Description
Jobs and projects	A sand county almanac, Aldo Leopold. Monographic work on the book

Assessment

Description	Qualification Evaluated Competences
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Master Session	(*)Avaliarase mediante exames de resposta curta.	65	CG1 CG2 CG6 CG7 CG8 CG9 CG16 CG24 CE12 CT1 CT11
Outdoor study / field practices	(*)Avaliaranse no exame da materia mediante preguntas específicas.	5	CG6 CG7 CG8 CG9 CG16 CE12 CT1 CT11
Classroom work	(*)Avaliaranse no exame da materia mediante preguntas específicas ou ben mediante traballos escritos.	10	CG6 CG7 CG8 CG9 CG16 CG24 CE12 CE36 CT1 CT11 CT20
Practice in computer rooms	(*)Avaliaranse no exame da materia mediante preguntas específicas ou ben mediante traballos.	10	CG6 CG7 CG8 CG9 CG16 CE12 CT1 CT5 CT11 CT15 CT20
Short answer tests	(*)Forman parte do exame escrito da materia	0	
Jobs and projects	(*)Entrega dun traballo monográfico sobre o libro "A sand county almanac", de Aldo Leopold. O traballo debe ser entregado un mes antes da data do exame.	10	

Other comments and July evaluation

Sources of information

Basic Bibliography

Leopold, Aldo, A sand county almanac (versión española: Una ética de la tierra), Oxford University Press, 1949, Oxford

Complementary Bibliography

Primack, R.B. & J. Ros, Introducción a la Biología de la Conservación, Ariel, 2002, Barcelona

Cordero Rivera, A. (Editor), Proxecto Galicia, Ecoloxía. Volumen 45. Conservación I., Hércules de Ediciones, 2005, A Coruña

Hunter, M.L., Fundamentals of Conservation Biology, Blackwell Science, 2002, Oxford

Sutherland, W.J., The Conservation Handbook: Research, Management and Policy, Blackwell Science, 2000, Oxford

Shafer, C. L., Nature Reserves, Smithsonian Institution Press, 1990, Washington

James P. Gibbs, Malcolm L. Hunter, Jr., Eleanor J. Sterling, Problem-solving in conservation biology and wildlife management: exercises for class, field, and laboratory, 2, Blackwell Science, 2008, Malden

Recommendations

Subjects that it is recommended to have taken before

Forestry Ecology/P03G370V01402

IDENTIFYING DATA**Forest Fires**

Subject	Forest Fires			
Code	P03G370V01802			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	2nd
Teaching language	Galician			
Department				
Coordinator	Fernández Alonso, José María			
Lecturers	Fernández Alonso, José María			
E-mail	txema182@gmail.com			
Web				
General description	Technicians of prevention *and extinction of forest *fires			

Competencies

Code		Typology
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG12	CG-12: Coñecemento dos procesos de degradación que afecten aos sistemas e recursos forestais: incendios.	- know
CG15	CG-15: Capacidade para o uso das técnicas de restauración hidrolóxico forestal.	- Know How
CE27	(*)CE-27: Capacidade para coñecer, comprender e utilizar os principios de: prevención e loita contra incendios forestais.	- know - Know How
CT5	(*)CBI 5: Capacidade de xestión da información.	- Know How
CT6	(*)CBI 6: Adquirir capacidade de resolución de problemas.	- Know How
CT7	(*)CBI 7: Adquirir capacidade na toma de decisións.	- Know How
CT11	(*)CBP 4: Habilidades de razoamento crítico.	- Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How

Learning outcomes

Learning outcomes	Competences
Identify the concept of forest fire, its characteristics general and the problem of wool causality the different territorial levels	CG8 CG12 CG15 CE27 CT5 CT6 CT7 CT11 CT13

Lana relation between competitions and results, and the weight of each competition inside wool matter show in him pdf attach.

http://forestales.uvigo.es/sites/default/files/40%20Fires.*Pdf#**overlay**context=are**content/competitions-*and-resulted-of-*learning-by-matter

Contents

Topic	
1. Forest fires.	Definition. General characteristics. Causality. Socioeconomic implications. Statistics. Repercussion throughout the world, the Mediterranean and Spain.
2. Flammability and combustibility.	Heat transfer. Phases of combustion in case of fire. The temperature during forest fires.
3 forest fuels.	Typology. The physical-chemical behavior with influence in the world. Models of fuel.
4 Influence of meteorological and topographic factors on the spread of fire.	Relative humidity and temperature. Precipitation. Winds. Heat inversion. Electric storms. Atmospheric stability.

5 Variables of basic behavior of forest fires.	Empirical physical and empirical models of propagation. Prediction systems. The dynamics of high intensity fires. The factors they cause. Fires of grasses. Fires of points.
6 Fire Prevention.	Analysis of the causes. Determining sites. The educational legislation. Coercive work. The rates of fire hazard. Spanish system. Systems from America, Canada and Australia.
7 Preventive forestry. Activities related to forest fires.	Influence of problems in the planning of forest fires. Firewall and firewall areas. Preventive forestry techniques. Amendments arborea vegetation. Scrub fuel control techniques. The prescribed burning schedule. Ignition techniques. Execution. Evaluation.
8 Organization of a permanent fire protection structure.	Operations. Extinction techniques. Basic principles. Lines. Lineas control lines. Direct attack The indirect attack.
9. Hand tools and equipment for security personnel.	Means of aerial combat in it fires. Characteristics general types, advantages and use limitaci3n.El auga.Retardantes: types, effects and applications.
10 Influence of forest fires on ecosystems.	Adaptations of vegetation fires. Fire regimes. Post-secondary world. Impact of fire on the ground. Erosive effects of forest fires. Change the fire hydrologicos.Repelencia after the infiltration of water. Changes in the PTO.
11 Restoration of burned areas.	Actions to control erosion. Revegetaci3n: Techniques, spices, advantages and limitations

Planning

	Class hours	Hours outside the classroom	Total hours
Laboratory practises	10	20	30
Master Session	30	30	60
Practice in computer rooms	6	6	12
Autonomous troubleshooting and / or exercises	2	20	22
Outdoor study / field practices	6	6	12
Short answer tests	1	3	4
Troubleshooting and / or exercises	5	5	10

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

Methodologies

	Description
Laboratory practises	Resolution of practical cases by students with educational orientation and the use of specific laboratory of materials and equipment
Master Session	Exposition of the content of the subject, the theoretical bases and / or guidelines for the realization of A work, the exercise or project to be developed by students
Practice in computer rooms	Practices in computer classrooms Present practice in computer rooms to solve practical assumptions of students with the orientation and use of specific programs and resources of the teaching team
Autonomous troubleshooting and / or exercises	Problem solving and / or autonomous problem solving exercises that students must solve in a personalized way outside the class throughout the course
Outdoor study / field practices	Practical exercise management tools and fire fighting equipment
All competences are type A, which they learn in all methodologies	

Personalized attention

Methodologies	Description
Laboratory practises	
Master Session	

Practice in computer rooms	
Outdoor study / field practices	
Autonomous troubleshooting and / or exercises	
Tests	Description
Short answer tests	
Troubleshooting and / or exercises	

Assessment			
	Description	Qualification Evaluated	Competences
Autonomous troubleshooting and / or exercises	*Approach of problems that he student has to resolve of personalised form *out of class to *the wide of him course	30	CG8 CG12 CG15 CE27 CT6 CT7 CT13
Short answer tests	*Approach of questions of *brief answer that he student has to resolve in class in him act of evaluation	21	CG8 CG12 CG15 CE27 CT11
Troubleshooting and / or exercises	*Approach of problems that he student has to resolve in class in him act of evaluation	49	CG8 CG12 CG15 CE27 CT5 CT6 CT11 CT13

Other comments and July evaluation

All wools competitions are of type To *and evaluate * of conjoint *form **segun *the *procedures described previously.

Sources of information

Basic Bibliography

Juli G. Pausas, ¿QUÉ SABEMOS DE...? Incendios forestales, CSIC e Catarata, 2012, Madrid

Vega, J.A. e outros, Acciones urgentes contra la erosión en áreas forestales quemadas. Guía para su planificación en Galicia. Xunta de Galicia, 1, Fuegoled, 2013, Santiago de Compostela

Complementary Bibliography

Arellano, S. e outros, Foto-Guía de combustibles forestales de Galicia. Versión I, 1, Andavira, 2016, Santiago de Compostela

Recommendations

Subjects that it is recommended to have taken before

Physics: Physics I/P03G370V01102

Physics: Physics II/P03G370V01202

Edaphology/P03G370V01302

Forestry/P03G370V01401

IDENTIFYING DATA**Cellulose, pulp and paper**

Subject	Cellulose, pulp and paper			
Code	P03G370V01803			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	2nd
Teaching language				
Department				
Coordinator	Lorenzo Fouz, David			
Lecturers	Lorenzo Fouz, David			
E-mail	davidlorenzofouz@gmail.com			
Web				
General description				

Competencies

Code		Typology
CG3	CG-03: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Químicos.	- know - Know How
CG8	CG-08: Capacidade para identificar os diferentes elementos: recursos naturais renovables susceptibles de protección, conservación e aproveitamento.	- know - Know How
CG23	CG-23: Capacidade para aplicar e desenvolver as técnicas de aproveitamento de produtos forestais madeirables e non madeirables.	- Know How
CG32	CG-32: Capacidade para caracterizar as propiedades anatómicas e tecnolóxicas das materias primas forestais madeirables así como das tecnoloxías e industrias destas materias primas.	- know - Know How
CE37	(*)CE-37: Coñecementos dos principios básicos da química da celulósica e papeleira e dos seus procesos industriais.	- know
CT1	(*)CBI 1: Capacidade de análise e síntese.	- Know How
CT3	(*)CBI 3: Capacidade de comunicación oral e escrita tanto na lingua vernácula como en linguas estranxeiras.	- Know How
CT13	(*)CBS 1: Aprendizaxe autónoma.	- Know How

Learning outcomes

Learning outcomes	Competences
(*)CE-37: Capacidad para conocer, comprender y utilizar los principios de los procesos industriales de fabricación de celulosa y papel	CG3 CG8 CG23 CG32 CE37 CT1 CT3 CT13

New

Contents

Topic	
1. Pulp, paper and cardboard	Requirements and sources of paper fibers. Chemical composition of wood. Behavior of cellulosic fibers
2. Characteristics of the wood	Effect of the morphology of the fibers on the properties of the paper. Identification of wood species
3. The resources of the wood.	Measurement of wood for pulp. Preparation of wood for the manufacture of cellulose. Quality control of the chips.

4. Processes for obtaining pastas	Mechanical, chemical, semi-chemical and dissolving pastes. Comparison of folders and applications thereof.
5. Sulphate process	Definition of terms and description of the kraft process. System of recovery of the chemical products. Chemistry of the kraft process and variables affecting sulfate cooking. Control Parameters.
6. Cooking equipment	Discontinuous and continuous digesters. Extended delineation. Biorefinerías
7. Processing of the pulp	Deflection, knot removal, washing, sorting of pastes, thickening, pumping, storing, mixing, drying, cutting and stacking.
8. Recovery of cooking liquors	Evaporation. Recovery boiler. Caustification. Calcination. Recovery of by-products.
9. Bleaching of folders	ECF and TCF sequences. Stages of bleaching. Circuit closure
10. Economy and operating strategy of a pasta factory	Basic economic considerations. Costs control
11. Preparation of pulp for paper production	Disintegration, refining, measurement and mixing of the composition
12. Use of secondary fibers	Disintegration of the paperboard and deinking
13. Non-fibrous additives in paper manufacturing	Non-fibrous additives applications: bonding, internal strength, wet strength resins, fillers, chemical dyes and pitch control.
14. Paper making	Wet and dry part
15. Reduction of contamination	Aqueous and atmospheric contamination in the pulp and paper industry
P1.	Optical microscopy Observation of hardwood fibers and conifers at different levels of refining. Observation of vessels, tracheids and parenchyma cells of different types of pastes.
P2.	Disintegration of pastes. Refining PFI. Schopper Grade Riegler UNE 57026, ISO 5263; UNE 57125, ISO 5264/2; UNE 57025, ISO 5267/1 Send Send Send
P3.	I refine on Valley stack. Formation of sheets UNE 57017, ISO 5264/1; UNE 57042, ISO 5269/1
P4.	Physical characteristics of the test sheets Gramaje (UNE 57104, ISO 5360); Thickness (UNE 57004, ISO 5270); Tear index (UNE 57033, ISO 1974); Burst index (UNE 57058, ISO 2758); Resistance to air passage. Gurley Method (UNE 57065, ISO 3687)
P5.	Case studies Chip quality; Specific consumption of wood; Factor H and G; Solids in black liquors

Planning

	Class hours	Hours outside the classroom	Total hours
Laboratory practises	17	15	32
Outdoor study / field practices	4	10	14
Master Session	25	54	79
Short answer tests	2	0	2
Practical tests, real task execution and / or simulated.	1	10	11
Case studies / analysis of situations	1	5	6
Troubleshooting and / or exercises	1	5	6

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

Methodologies

	Description
Laboratory practises	Carrying out the practical tests according to ISO and UNE standards for pulp, paper and cardboard
Outdoor study / field practices	Eucalyptus kraft pulp mill. Bleaching TCF. ENCE Business Group
Master Session	Exposure of the contents of the subject supported in PowerPoint presentations and videos

Personalized attention

Tests	Description
Case studies / analysis of situations	

Assessment			
	Description	Qualification Evaluated	Competences
Short answer tests	(*)Bloques de definiciones (20) y bloques de respuestas conceptuales (10)	70	CG3 CG8 CG23 CG32 CE37
Practical tests, real task execution and / or simulated.	(*)Presentación en clase del trabajo asignado	10	CG3 CG8 CG23 CG32 CE37 CT13
Troubleshooting and / or exercises	(*)Dos ejercicios prácticos	20	CG8 CG23 CG32 CT13

Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

1. Smook G. A, Handbook for pulp and paper technologists, 2002, Tappi press
2. Herbert Sixta, Handbook of Pulp. 2 Volume, 2006, Set. Wiley-VCH
3. Hans Ulrich Süss, Pulp Bleaching Today, 2010, Walter de Gruyter GmbH
4. Pratima Bajpai, Environmentally Friendly Production of Pulp and Paper, 2010, John Wiley & Sons, Inc.
5. Varios Autores, 5. Papermaking Science and Technology (19 vol.), 1999, Fapet Oy, Finland

Recommendations

Subjects that are recommended to be taken simultaneously

Quality control and prevention of occupational hazards in the forestry industry/P03G370V01804

Subjects that it is recommended to have taken before

Chemistry: Chemistry/P03G370V01204

Forest exploitation/P03G370V01601

Primary wood processing industries/P03G370V01706

IDENTIFYING DATA**Quality control and prevention of occupational hazards in the forestry industry**

Subject	Quality control and prevention of occupational hazards in the forestry industry			
Code	P03G370V01804			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	2nd
Teaching language				
Department				
Coordinator	Bartolome Mier, Javier			
Lecturers	Bartolome Mier, Javier			
E-mail	jbartolome@uvigo.es			
Web	http://www.forestaes.uvigo.es			
General description	Introduction to the systems of guarantee of the quality and of management of labour risks. Methods of continuous improvement			

Competencies

Code	Typology
CE39 (*)CE-39: Capacidade para coñecer, comprender e utilizar os principios de: control de calidade na industria forestal.	- know - Know How
CE40 (*)CE-40: Capacidade para coñecer, comprender e utilizar os principios de: seguridade e hixiene industrial.	- know - Know How
CT19 (*)CBS 7: Motivación pola calidade.	- Know be

Learning outcomes

Learning outcomes	Competences
Capacity to know, comprise and use the principles of: Control of quality and prevention of labour risks in the forest industry.	CE39 CE40 CT19
New	

Contents

Topic	
1.- Forest industry and quality	1.1. General concepts
2.- General concepts of the quality	2.1 Definition of quality 2.2. Definition of Systems of quality 2.3.-Evolution of the systems of quality 2.4. Profits of the quality 2.5. Organisational model of the quality 2.6. Commitment of the direction 2.7. Human team
3.- Norms ISO 9001: 2008 and ISO 9004: 2009	3.1 Aims 3.2. Scope 3.3. Approach 3.4. Points of norm
4.- As implant a system of quality	4.1. Phases of the implantation of a system of management 4. 2. Process of the certification 4.3. Orientation to the management by processes 4.4. Management of the improvement of a process

5.- Audits of Quality	5.1. Definition of audit 5.2. Types of audit 5.3. Process of audit 5.4. Team of audit 5.5. Preparation of the audit 5.6. Development of the audit. 5.7. Report of audit
6.- The marked CE of wooden products for employment in the construction	6.1. Realisation of the marked CE of products. Phases of the process
7.- Foundation of the technicians of improvement of the conditions of work.	7.1.- Technical of prevention of labour risks. 7.2.- Norma and signaling in security. 7.3.- Collective and individual protection 7.4.- Plans of emergency and autoprotection. 7.5.- Toxic and dangerous waste 7.6.- Installations against forestry fire.
8.- Security in the work	8.1.- Accidents of Work 8.2.- Analysis and general evaluation of the risk of accident.
9.- Industrial hygiene.	9.1.- Concepts and aims. 9.2.- Normative legal specific. 9.3.- Physical agents; noise, vibrations 9.4.- Biological agents 9.5.- Medicine of the work: Pathologies of labour origin. 9.6.- first aid And first helps. 9.7.- Ergonomics and psicosycology

Planning

	Class hours	Hours outside the classroom	Total hours
Case studies / analysis of situations	6	10	16
Outdoor study / field practices	4	2	6
Master Session	34	72	106
Short answer tests	2	20	22

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

Methodologies

	Description
Case studies / analysis of situations	Seminars of approach and resolution of practical cases with oral presentation
Outdoor study / field practices	Knowledge of the implantation of systems of quality in companies of transformation of the wood
Master Session	Explanation Of theoretic concepts and exemplifications

Personalized attention

Methodologies	Description
Master Session	
Case studies / analysis of situations	

Assessment

	Description	Qualification Evaluated	Competences
Master Session	*Participacion Active in the debates that pose	10	CE39 CE40
Case studies / analysis of situations	*Participacion Active in the *resolucion of the supposed *practicos that pose	10	CE39 CE40 CT19
Outdoor study / field practices	Presentation of the memory of the visits realised	10	CE39 CE40 CT19

Short answer tests	*Valoracion Of the knowledge of the matter in *funcion to the questions realised	70	CE39 CE40
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Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Other comments

*N|To

IDENTIFYING DATA**Externships: Internships**

Subject	Externships: Internships			
Code	P03G370V01981			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	6	Optional	4th	2nd
Teaching language	Spanish Galician			
Department				
Coordinator				
Lecturers				
E-mail				
Web	http://http://transferencia.uvigo.es/transferencia_gl/practiclas/			
General description	http://transferencia.uvigo.es/opencms/export/sites/transferencia/transferencia_gl/documentos/instrucion_curriculares.pdf			

Competencies

Code		Typology
CE41	(*)CE-41.- Capacidade para a realización das tarefas profesionais propias da titulación no campo do traballo individual e en equipo, aplicando, según sexa a práctica en cuestión, algunha/s das técnicas e aptitudes que, a modo de exemplo e sen ser excluíntes, se citan na memoria de verificación.	- know - Know How - Know be

Learning outcomes

Learning outcomes	Competences
New	CE41
New	

Contents

Topic	
The contents of the practical will be posed in each particular case by the School of Forest Engineering and the organisation and will attend to the acquisition by part of the student practitioner of some general and specific competitions related in this description of matter.	They developed any practical activity related with the degree
Professional activity of the student by the respective organisation that offer the practice.	They will be able to in practice the competitions purchased in the degree

Planning

	Class hours	Hours outside the classroom	Total hours
External practises	0	150	150

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

Methodologies

	Description
External practises	The contents of the practical will be posed in each particular case by the School of Forest Engineering and the organisation and will attend to the acquisition by part of the student practitioner of some general and specific competitions related in this description of matter.

Personalized attention

Methodologies	Description
External practises	The student will have a tutor in the centre and one in the company

Assessment

Description	Qualification	Evaluated Competences
External practises	100	CE41

Other comments and July evaluation

The positive evaluation of the realisation of the practice will take place on the base of a favourable report issued by the organisation of received of the student practitioner. Anyway the student will have to present to the Direction of the School of Forest Engineering a memory summary of the practice realised

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Other comments

The fixed competition worked is the *CE41, apart from this the tutor marked the others competitions worked that will depend on the practices realised and will be able to be in the group of the general, transversal and specify.

GENERAL COMPETITIONS: *CG1-*CG14

TRANSVERSAL COMPETITIONS: *CT1-*CT10

SPECIFIC COMPETITIONS: *CE1-*CE40

IDENTIFYING DATA**Final Year Dissertation**

Subject	Final Year Dissertation			
Code	P03G370V01991			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	12	Mandatory	4th	2nd
Teaching language	Spanish Galician			
Department				
Coordinator				
Lecturers				
E-mail				
Web	http://www.forestales.uvigo.es/sites/default/files/Reg%20TFG%20Enx%20Forestal%20APROBADO%20comisi%C3%B3n%20Permanente%207_3_13.pdf			
General description	<p>The *TFG is a personal work that each student will realise of autonomous way under *tutorización educational, and has to allow him show of form integrated the acquisition of the formative contents and the competitions associated to the title.</p> <p>In particular, it will have to contribute to the development of the following:</p> <p>to) Capacity to develop the methodology of a project and formulate a plan of work related with an or varied of the fields of present knowledge in the *Grao;</p> <p>*b) Capacity to execute the work projected;</p> <p>*c) Capacity to present and defend publicly the *TFG.</p> <p>In no case it can be a work presented previously by the/the student in some matter of any one another degree, although it can integrate or develop previous partial works facts in the activity of other matters of the degree.</p> <p>The fact that the *TFG was a personal and individual work does not exclude that, to develop a proposal of *envergadura sufficient, can participate varied/the students, each the one who with a precise plot of the global task; this fact will be authorised by the previous Academic Commission favourable report of the Coordinator of the Module of the *TFG . In this case the *alumnado involved in an even work will share the person tutor and will have the same court of evaluation, whereas the presentation and defence and the evaluation will be individual for each one of the parts.</p> <p>The *TFG will be able to elaborate in institutions or external companies to the University of Vigo, in which they establish in the institutional agreements signed. In whose case will exist the figure of a person *cotutora pertaining to the institution or company. The person academic tutor will share with the person *cotitora the tasks of direction and orientation of the/the student, and will be, in any case, responsibility of the academic tutor facilitate the administrative management of the realisation and defence.</p> <p>The student has right to the recognition of the *autoria of the *TFG elaborated and to the protection of his copyright. The titularity of the derivative rights will share with the *títores, with the *cotitores, the own University of Vigo and with the public entities or deprived to which belong, in the planned conditions in the valid legislation.</p>			

Competencies

Code	Typology
CE42 (*)CE-42: Capacidade para realizar un traballo orixinal para ser presentado e defendido ante un tribunal universitario, consistente nun proxecto no campo das tecnoloxías específicas da Enxeñaría Forestal, de natureza profesional no que se sinteticen as competencias adquiridas nas ensinanzas e materias da carreira.	- know - Know How - Know be

Learning outcomes

Learning outcomes	Competences
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(*)CE-42: Capacity to realise an original work to be presented and defended in front of a university court, CE42 consistent in a project in the field of the specific technologies of the Forest Engineering, of professional nature in which *sinteticen the competitions purchased in the educations and matters of the career. To way of orientation and without being *excluyente, the student will have to develop competitions purchased in matter of:

1. Basic studies of the half physicist, *biocenosis, landscape and *socioeconomía.
2. Application of the principles of the engineering.
3. Establishment of relations between the project and the half physicist and socioeconomic where realises
4. Development of primary phases of the project of engineering.
5. Election of criteria, selection of alternatives, analysis of sensitivity, compatibility and stability, optimisation and simplification.
6. Organisation and protection of the project, development of the subsystems.
7. Preparation of the design, graphic development and planes of the project.
8. Verification, audits and control of quality.

New

New

Contents

Topic

The student will have to present in the term of 15 Said proposal will have to include like minimum: skillful days from dates it of ending of the term of enrollment corresponding to the second semester a Proposal of TFG.

- a) An explanatory memory of the project that pretends realise, that include Title, antecedents, justification of the need that tries cover or solution to the problem posed, aims, technology to employ and results expected.
- b) Methods, systems or mechanical tools, electronic the computer, material, machinery or other resources, foreseen in the realisation of the TFG.
- c) In its case, graphic or cartographic support of the place where pretends realise the TFG.
- d) Time estimated or schedule for the realisation of the TFG.
- e) Proposal of Tutor

Planning

	Class hours	Hours outside the classroom	Total hours
Tutored works	0	300	300

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

Methodologies

	Description
Tutored works	See Regulation TFG

Personalized attention

Assessment

Description	Qualification	Evaluated Competences
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Other comments and July evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

