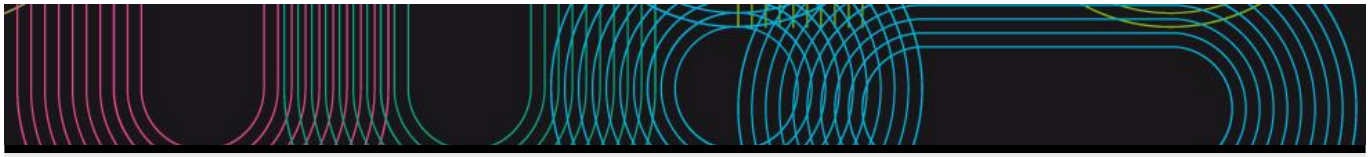

(*)Escola de Enxeñaría Forestal

Presentation

Welcome to the Forestry Faculty (Campus of Pontevedra - University of Vigo). Detailes 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, maaning 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: sdeuetf@uvigo.es
7. Web: http://www.forestales.uvigo.es

Faculty Management

Managerial team:

Director: D. Enrique Valero Gutiérrez del Olmo

Deputy director: Dª. 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:

(*)Servizo e Infrastructuras 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	342,11m^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 m^2	pendente	NO	NO

2º	Lab. Enxeñería Eléctrica	110,73 m^2	21	NO	NO
2º	Lab. Enxeñería Química	109,98 m^2	15	27,40 m^2	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_estudantes.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 4th

Code	Name	Quadmester	Total Cr.
P03G370V01701	Physical planning and land management	1st	6
P03G370V01702	Hunting and fishing management	1st	6
P03G370V01703	Pathology and forest pests	1st	6
P03G370V01704	Forest and pasture management	1st	6
P03G370V01705	Wood preservation and drying technology	1st	6
P03G370V01706	Primary wood processing industries	1st	6
P03G370V01707	Industrial organisation and processes in the wood industry	1st	6
P03G370V01708	Product development and innovation in the wood industry	1st	6
P03G370V01709	Innovation and development of products in the forest industry	1st	6
P03G370V01801	Management of protected areas and biodiversity	2nd	6
P03G370V01802	Forest Fires	2nd	6
P03G370V01803	Cellulose, pulp and paper	2nd	6
P03G370V01804	Quality control and prevention of occupational hazards in the forestry industry	2nd	6
P03G370V01805	Chemical industries of the wood, cellulose, pulp and paper	2nd	6
P03G370V01981	Internships: Internships	2nd	6
P03G370V01991	Final Year Dissertation	2nd	12

IDENTIFYING DATA				
Physical planning and land management				
Subject	Physical planning and land management			
Code	P03G370V01701			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Valero Gutiérrez del Olmo, Enrique María			
Lecturers	Álvarez Bermúdez, Xana Valero Gutiérrez del Olmo, Enrique María			
E-mail	evalero@uvigo.es			
Web				
General description				

Competencies	
Code	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
B2	Ability to analyze the ecological structure and function of forest systems and resources, including landscapes.
B10	Ability to apply the techniques of forest management and land planning, as well as the criteria and indicators of sustainable forest management within the framework of forest certification procedures.
C32	Ability to know, understand and use the principles of: planning and planning of the territory. Forest landscaping.
D4	Sustainability and environmental commitment
D5	Capacity for information management, analysis and synthesis
D6	Organization and planning capacity
D7	Skill in the use of IT tools and ICTs.
D8	Ability to solve problems, critical reasoning and decision making
D9	Teamwork skills, skills in interpersonal relationships and leadership.
D10	Autonomous Learning

Learning outcomes	
Expected results from this subject	Training and Learning Results

2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances.	B1 B2 B10	C32	D4 D5 D6
3R. 2018 Be conscious of the multidisciplinary context of the engineering.			D7
4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses.			D8 D9 D10
5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial.			
6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project.			
8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality.			
11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality.			
12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.			
13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality.			
14R. 2018 Capacity to apply norms of engineering in the his speciality.			
15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering.			
16R. 2018 general Ideas on economic questions, organisational and of management (how management of projects, management of risks and change) in the industrial and entrepreneurial context.			
17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions			
18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions.			
19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general.			
20R. 2018 Capacity to work effectively in national and international contexts, individually and in team, and cooperate with the engineers and people of other disciplines.			
21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life.			
22R. 2018 Capacity to be to the day of the scientific and technological news.			

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
Mentored work	0	30	30
Presentation	25	30	55
Case studies	21	23	44
Objective questions exam	1	0	1
Essay	0	20	20

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

Methodologies

	Description
Mentored work	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 ...
Presentation	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 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 assistance

Methodologies	Description
Mentored work	

Assessment

	Description	Qualification	Training and Learning Results
Mentored work	(*).	30	
Presentation	(*).	70	

Other comments on the 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	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish Galician			
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	
B8	Ability to manage and protect forest fauna populations, with special emphasis on hunting and fish populations.
C33	Ability to know, understand and use the principles of: hunting and fishing management. Aquaculture systems.
D4	Sustainability and environmental commitment
D5	Capacity for information management, analysis and synthesis
D6	Organization and planning capacity
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes	
Expected results from this subject	Training and Learning Results

2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances.	B8	C33	D4 D5 D6
3R. 2018 Be conscious of the multidisciplinary context of the engineering.			D8
4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses.			
5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial.			
6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project.			
8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality.			
9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality.			
10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study.			
11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality.			
13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality.			
14R. 2018 Capacity to apply norms of engineering in the his speciality.			
15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering.			
16R. 2018 general Ideas on economic questions, organisational and of management (how management of projects, management of risks and change) in the industrial and entrepreneurial context.			
17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions			
18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions.			
19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general.			
20R. 2018 Capacity to work effectively in national and international contexts, individually and in team, and cooperate with the engineers and people of other disciplines.			

Contents

Topic	
BLOCK I: HUNTING AND KINETIC RESOURCES	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
BLOCK 2: AQUACULTURE	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

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	45	0	45
Studies excursion	20	10	30
Autonomous practices through ICT	10	23	33
Objective questions exam	30	0	30
Problem and/or exercise solving	2	0	2
Systematic observation	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
Lecturing	(*)Impartiranse leccións en clase dos temas de desenvolvemento
Studies excursion	(*)Organizaranse saídas de campo relacionadas coa materia, que posteriormente serán avaliadas cun informe das prácticas realizadas.
Autonomous practices through ICT	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.

Personalized assistance	
Methodologies	**Description**
Autonomous practices through ICT	
Tests	**Description**
Objective questions exam	

Assessment			
	Description	Qualification	Training and Learning Results
Autonomous practices through ICT	(*)Avaliaranse as saídas de campo (20%) e as probas a través de TIC (40%)	60	
Objective questions exam	(*)Diferentes preguntas sobre a materia vista nas sesións maxistrais así como nas prácticas realizadas.	40	

Other comments on the Evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

ARRIGNON, J.., **Ecología y piscicultura de aguas dulces.**, (1979),

BARNABE, G, **Acuicultura**, 1989,

BEVERIDGE, M., **Acuicultura en jaulas**, 1984,

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DOADRIO, I., B. ELVIRA y. Y. BERNAT, **Peces continentales españoles. Inventario y clasificación de zonas fluviales**, 1991,

DRUMOND, S., **Cría de la trucha**, 1988,

ESPINOSA, J. y LABARTA, U., **Reproducción en Acuicultura.**, 1987,

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GARCÍA-BADELL, J. J, **Tecnología de las explotaciones piscícolas**, 1985,

GARCÍA DE JALÓN, D.; G. PRIETO y F. HERRERUELA, **Peces ibéricos de agua dulce**, 1989,

GUEGUEN, J. y PROUZET, **Le saumon atlantique**, 1994),

HUET, M., **Tratado de piscicultura**, 1983,

LOBÓN CERVIÁ, JAVIER, **Dinámica de poblaciones de peces en ríos. Pesca eléctrica y métodos de capturas sucesivas en la estima de abundancias**, 1991,

MUUS, B. & P. DAHLSTÖM, **Los peces de agua dulce de España y de Europa; pesca, biología, importancia económica**, 1970,

ROBERTS, R. J, **Patología de los peces**, 1981,

SEDWICK, S.D., **Cría de l trucha**, 1987,

SHEPHERD, J. C. & BROMAGE, R. N., **Cultivo intensivo de peces.**, 2008,

STREBLE, H. y D. KRAUTER, **Atlas de los Microorganismos de Agua Dulce**, 2007,

ALVARADO CORRALES, E. et al., **Manual de Ordenación y Gestión Cinegética.**, 2001,

SÁNCHEZ GASCÓN, A, **Guardas de Caza: Legislación**, 1996,

AUDEBERT, Tristan (Henri Béraud), **La caza de la becada**, 1997,

BERTON, Jean, **El mundo de las armas de caza**, 2003,

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

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

Recommendations

Subjects that continue the syllabus

Projects/P03G370V01503

Physical planning and land management/P03G370V01701

Subjects that are recommended to be taken simultaneously

Forest Ecology/P03G370V01402
Use of forests/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	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish Galician			
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	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
B3	Knowledge of degradation processes that affect forest systems and resources (pollution, pests and diseases, fires, etc.) and capacity for the use of forest environment protection techniques, forest hydrological restoration and biodiversity conservation .
C34	Ability to know, understand and use the principles of: forest diseases and pests.
D4	Sustainability and environmental commitment
D7	Skill in the use of IT tools and ICTs.
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes	
Expected results from this subject	Training and Learning Results

2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances.	B1 B3	C34	D4 D7 D8
3R. 2018 Be conscious of the multidisciplinary context of the engineering.			
4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses.			
5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial.			
6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project.			
7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering.			
8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality.			
9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality.			
10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study.			
11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality.			
13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality.			
14R. 2018 Capacity to apply norms of engineering in the his speciality.			
15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering.			
17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions			
20R. 2018 Capacity to work effectively in national and international contexts, individually and in team, and cooperate with the engineers and people of other disciplines.			
21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life.			
22R. 2018 Capacity to be to the day of the scientific and technological news.			

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: Sphaerospsis 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 = Hypoxylon 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
Lecturing	30	70	100
Laboratory practical	20	20	40
Studies excursion	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
Lecturing	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 practical	Application of the knowledge of the subject. Learning and handling of basic techniques.
Studies excursion	Realization of exits to forest ecosystems and / or visits to research centers or companies related to the subject studied.

Personalized assistance

Methodologies	Description
Laboratory practical	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.
Lecturing	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	Training and Learning Results
Lecturing	(*)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 reposta curta e outras de resposta longa. Exposición por parte do alumnado dun dos temas do programa.	70	B1 C34

Laboratory practical	(*)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	C34

Other comments on the Evaluation

Exam dates

First Call: January 10, 2020, 10:00 Hours

Second Call: June 25, 2020 12:00 Hours

Sources of information

Basic Bibliography

Complementary Bibliography

AGRIOS, G.N., **Plant pathology.**, 5ª Ed. Elsevier Academic Press,

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

BARBAGALLO S., CRAVEDI P., PASQUELINI E. & PATTI I., **Pulgones de los principales cultivos frutales**, Bayer/Mundi-Prensa,

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

DAJOZ R., **Entomología forestal. Los insectos y el bosque: papel y diversidad de los insectos en el medio foresta**, Mundi-Prensa,

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

LIÑÁN , C, **Vademecum de productos fitosanitarios y nutricionales.**, Mundi Prensa,

Lombardero M.J. & Fernández de Ana F.J., **A Procesionaria do piñeiro en Galicia.**, Consellería de Agricultura, Gandería e Montes,. Xunta de Galicia,

MALOY O.C. & MURRAY T.D. (eds), **Encyclopedia of plant pathology**, New York, [etc.] : John Wiley,

Mansilla J.P., Pérez R., Pintos C., Salinero C. & Iglesias C., **Plagas y enfermedades del castaño en Galicia**, 2ª ed. Xunta de Galicia. Consellería de Agricultura, Ganadería e Política Agroalimentaria.,

MUÑOZ LÓPEZ C., PÉREZ FORTEA V., COBOS SUÁREZ P., HERNÁNDEZ ALONSO R., SÁNCHEZ PEÑA G, **Sanidad forestal: guía en imágenes de plagas, enfermedades y otros agentes presentes en los montes**, Mundi-Prensa 3ª ed,

ROMANYK, N. & CADAHIA, D., **Plagas de insectos en las masas forestales**, Mundi-Prensa,

TAINTER, F.H. & BAKER, F.A, **Principles of forest pathology**, John Wiley & Sons,

TORRES JUAN, J., **Patología Forestal.Principales enfermedades de nuestras especies forestales**, Mundi Prensa.,

VILLALVA, S., **Plagas y enfermedades de jardines**, 2ª Ed. Mundi-Prensa,

http://www.infoagro.com/agrovademecum/, **Agrovademecum**,

ZÚBRIK M., KUNCA A. & CSÓKA G. (Eds)., **Insects and Diseases damaging trees and shrubs of Europe**, NAP Editions,

Robert N. Trigiano, Mark T. Windham, Alan S. Windham (Eds.), **Plant pathology concepts and laboratory exercises**, Boca Raton (Florida): CRC,,

Remacha-Gete, A., **Agentes Bioticos que atacan la madera. Ciclo biológico, tipo de ataque y control del mismo**, AITiM. Madrid,

http://www.efa-dip.org/es/Publicaciones/FTecnicas/FichaListaTIPO.htm, **Índice de Fichas Técnicas disponibles en la Estación Fitopatológica**, Diputación de Pontevedra,

Recommendations

Subjects that it is recommended to have taken before

Biology: Plant Biology/P03G370V01201
Botany/P03G370V01303
Forest 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	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Valero Gutiérrez del Olmo, Enrique María			
Lecturers	Valero Gutiérrez del Olmo, Enrique María			
E-mail	evalero@uvigo.es			
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 estructura, manexo e xestión dos devanditos sistemas silvopastorais			

Competencies	
Code	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
B11	Ability to characterize the anatomical and technological properties of wood and non-timber forest raw materials, as well as the technologies and industries of these raw materials.
C8	Knowledge of the bases and biological foundations of the plant field in engineering.
C15	Ability to know, understand and use the principles of: forest botany.
C17	Ability to know, understand and use the principles of silviculture.
C27	Ability to know, understand and use the principles of: prevention and fight against forest fires.
C35	Ability to know, understand and use the principles of: pasciculture and agroforestry systems.
D5	Capacity for information management, analysis and synthesis
D6	Organization and planning capacity
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes	
Expected results from this subject	Training and Learning Results

2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances.	B1 B11	C8 C15 C17	D5 D6 D8
3R. 2018 Be conscious of the multidisciplinary context of the engineering.		C27	
4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses.		C35	
5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial.			
6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project.			
7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering.			
8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality.			
9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality.			
10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study.			
11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality.			
12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.			
13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality.			
14R. 2018 Capacity to apply norms of engineering in the his speciality.			
15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering.			
16R. 2018 general Ideas on economic questions, organisational and of management (how management of projects, management of risks and change) in the industrial and entrepreneurial context.			
17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions			
18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions.			
19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general.			

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. Sega. 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 silvopastoral 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
Mentored work	10	25	35
Studies excursion	25	10	35
Lecturing	40	35	75
Objective questions exam	3	0	3
Practices report	1	0	1
Systematic observation	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
Mentored 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
Studies excursion	Collect and identify grasses and legumes.
Lecturing	Identify Grasses and legumes of silvopastoral interest

Personalized assistance	
Methodologies	**Description**
Lecturing	
Mentored work	
Studies excursion	
Tests	**Description**
Objective questions exam	

Assessment			
	Description	Qualification	Training and Learning Results
Mentored work	(*)(*) Confeción dun Herbario	10	
Studies excursion	(*)(*) Recoñocemento e identificacion en campo de especies de interese pascicola	10	
Lecturing	(*) (*) Recoñocemento de especies pascicolas	10	
Objective questions exam	(*)Recoñocer os coñecementos adquiridos	70	

Other comments on the Evaluation

Sources of information
Basic Bibliography
Complementary Bibliography
SAN MIGUEL, A., **Pastizales Naturales Españoles**,
RIGUEIRO,A., **Pastoreo controlado en los bosques gallegos**,
SAN MIGUEL, A, **La dehesa Española**,
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,
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,
MONTOYA, J. M., **Pastoralismo Mediterráneo**,
SILVA,F.J, **Prácticas agroforestales en pinares y eucaliptales atlánticos**,

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

Recommendations

Subjects that continue the syllabus

Biology: Plant Biology/P03G370V01201
Forest 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	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish Galician			
Department				
Coordinator	González Prieto, Óscar			
Lecturers	González Prieto, Óscar			
E-mail	oscargprieto@uvigo.es			
Web	http://www.forestales.uvigo.es			
General description	(*)Asignatura que trata las dos tecnologías básicas para el uso industrial de la madera			

Competencies	
Code	
B11	Ability to characterize the anatomical and technological properties of wood and non-timber forest raw materials, as well as the technologies and industries of these raw materials.
C31	Knowledge for the calculation and design of carpentry facilities. Drying, debarking and crushing of wood.
D5	Capacity for information management, analysis and synthesis
D6	Organization and planning capacity
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes	
Expected results from this subject	Training and Learning Results

2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances. 4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses. 5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial. 6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project. 7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering. 8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality. 9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality. 10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study. 11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality. 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality. 13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality. 14R. 2018 Capacity to apply norms of engineering in the his speciality. 15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering. 16R. 2018 general Ideas on economic questions, organisational and of management (how management of projects, management of risks and change) in the industrial and entrepreneurial context. 18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions.	B11	C31	D5 D6 D8

Contents	
Topic	
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
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

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	28	80	108
Problem solving	8	18	26
Studies excursion	4	6	10
Laboratory practical	2	0	2

Introductory activities	1	0	1
Problem and/or exercise solving	2	0	2
Problem and/or exercise solving	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
Lecturing	Exposition of objectives and contents and relevance of the same within the set of competences of the subject
Problem solving	Type and oral presentation problem solving seminars
Studies excursion	Explanation "in situ" of industrial processes of drying and conservation of wood
Laboratory practical	Explanation of the handling of dryers
Introductory activities	Presentation of the objectives and development of the subject

Personalized assistance

Methodologies	Description
Problem solving	
Laboratory practical	

Assessment

	Description	Qualification	Training and Learning Results
Lecturing	(*)Evaluación continua a través de la asistencia a las sesiones impartidas	10	
Problem solving	(*)Evaluación continua a través de la asistencia a las clases prácticas impartidas	10	
Studies excursion	(*)Presentación de una memoria de las visitas realizadas	5	
Problem and/or exercise solving	(*)Evaluación de la prueba de evaluación sobre los contenidos teóricos de la asignatura	55	
Problem and/or exercise solving	(*)Evaluación de las pruebas de realización de ejercicios	20	

Other comments on the Evaluation

Exam calendar:

First Call: January 24, 2020, 4:00 p.m.
Second Call: June 26, 2020, 4:00 p.m.

Publication of notes by official methods.

Sources of information

Basic Bibliography

Complementary Bibliography

Oscar González-Prieto, **Patoloxía da Madeira Estrutural**, Xunta,
F. Arriaga, **Intervención en estructuras de madera**, AITIM,
Fernando Peraza, **Protección Preventiva de la Madera**, AITIM,
J.I. Fernández-Golfín Seco, **Manual de secado de La Madera**, AITIM,
León M. Fiske, **Manual del Secado de Maderas**, Muni Prensa,

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
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	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Bartolome Mier, Javier			
Lecturers	Bartolome Mier, Javier González Prieto, Óscar			
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	
B11	Ability to characterize the anatomical and technological properties of wood and non-timber forest raw materials, as well as the technologies and industries of these raw materials.
B12	Capacity for organization and planning of companies and other institutions, with knowledge of the legislative provisions that affect them and the fundamentals of marketing and marketing of forest products.
C29	Ability to know, understand and use the basic principles of the processes of first transformation of wood and the principles of: non-wood forest raw materials; industrial processes of non-wood products: cork, resin, essential oils.
D4	Sustainability and environmental commitment
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes	
Expected results from this subject	Training and Learning Results

2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances. 4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses. 6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project. 7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering. 8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality. 9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality. 11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality. 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality. 13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality. 14R. 2018 Capacity to apply norms of engineering in the his speciality. 15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering. 16R. 2018 general Ideas on economic questions, organisational and of management (how management of projects, management of risks and change) in the industrial and entrepreneurial context. 17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions 18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions.	B11 B12	C29	D4 D8

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
Lecturing	34	87	121
Studies excursion	4	2	6
Laboratory practical	6	0	6
Introductory activities	1	0	1
Problem and/or exercise solving	1	0	1
Practices report	0	2	2

Laboratory 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
Lecturing	Exhibition of aims and contents and importance of the same inside the group of the competitions of the subject
Studies excursion	Explanation "in situ" of industrial processes in factories of first transformation of the wood
Laboratory practical	Macroscopic recognition of commercial wooden species in Spain
Introductory activities	Exhibition of the aims and development of the subject

Personalized assistance

Assessment

	Description	Qualification	Training and Learning Results
Lecturing	Continuous evaluation through the assistance to the classes of classroom	7	C29
Studies excursion	Presentation of a memory of the visits realised	10	C29
Laboratory practical	(*)Reconocimiento macroscópico de las maderas comerciales en España	20	C29
Introductory activities	(*).	0	
Problem and/or exercise solving	Evaluation of the theoretical knowledges through proofs of short answer	60	C29
Practices report	*Elaboarciión Of guide of the commercial wooden species in Spain	3	C29
Laboratory practice		0	

Other comments on the Evaluation

Calendar of examinations:

First Announcement: 22 of jan of 2020, 16.00 Second
Hours Announcement: 22 of juneof 2020 16.00 Hours

The official dates and the possible modifications are exposed in the official board of the Forest EE and in the web #http://forestales.uvigo.es/*gl/

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

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	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish Galician			
Department				
Coordinator	García-Pintos Escuder, Adela			
Lecturers	García-Pintos Escuder, Adela González Prieto, Óscar			
E-mail	adelagpe@uvigo.es			
Web	http://www.forestales.uvigo.es			
General description	(*)Materia que trata sobre os procesos industriais de transformación da madeira, especialmente os que se levan a cabo na fabricación dos produtos finais, así como as técnicas de xestión e mellora continua da produción.			

Competencies	
Code	
B12	Capacity for organization and planning of companies and other institutions, with knowledge of the legislative provisions that affect them and the fundamentals of marketing and marketing of forest products.
C30	Ability to know, understand and use the principles of: knowledge of the basic principles of the second transformation processes of wood.
C31	Knowledge for the calculation and design of carpentry facilities. Drying, debarking and crushing of wood.
D5	Capacity for information management, analysis and synthesis
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes	
Expected results from this subject	Training and Learning Results

2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances. 3R. 2018 Be conscious of the multidisciplinary context of the engineering. 4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses. 5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial. 6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project. 7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering. 8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality. 9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality. 11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality. 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality. 13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality. 15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering. 16R. 2018 general Ideas on economic questions, organisational and of management (how management of projects, management of risks and change) in the industrial and entrepreneurial context. 18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions.	B12	C30 C31	D5 D8

Contents	
Topic	
The sector of second transformation of the wood	The carpentry and furniture industry in: · Galicia · Spain · Europe
Industrial operations on wood and boards Mechanization of wood and boards	Industry 4.0 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
Introductory activities	1	0	1
Lecturing	17	44	61
Problem solving	11	30	41
Mentored work	7	20	27
Studies excursion	8	10	18
Problem and/or exercise solving	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

Introductory activities	Introduction to the objectives and development of the subject
Lecturing	Structured exposition of objectives, theoretical contents and exemplifications of the subjects and sub-themes that form the program of the subject
Problem solving	Active participation in the resolution of problems and / or exercises
Mentored work	Resolution of small practical exercises that accompany a theoretical explanation. Seminars of approach and resolution of type problems with oral presentation
Studies excursion	Explanation "in situ" of the organization and industrial processes in the carpentry and furniture industries

Personalized assistance

Methodologies	Description
Mentored work	The tutoring hours will be indicated at the beginning of the course
Problem solving	The tutoring hours will be indicated at the beginning of the course

Assessment

	Description	Qualification	Training and Learning Results
Lecturing	(*)Participación activa no debate que se expoña na aula sobre os conceptos teóricos	10	C30 C31
Mentored work	(*)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	C30 C31
Studies excursion	(*)Presentación dunha memoria das visitas realizadas	5	C30 C31
Problem and/or exercise solving	(*)Proba escrita sobre os contidos teóricos e prácticos da materia	80	C30 C31

Other comments on the Evaluation

Sources of information

Basic Bibliography

Jay Heizer, Barry Render, **Dirección de la producción y de operaciones : decisiones tácticas**, 11, Pearson Educación, 2015

Complementary Bibliography

Carlos Rodrigo Illera, María Pilar Alberca Oliver, **Dirección de la producción**, Sanz y Torres, 2015

Lluis Cuatrecasas Arbós, **Organización de la producción y dirección de operaciones : sistemas actuales de gestión eficiente y competitiva**, Diaz de Santos, 2011

Tony Crespo Franco, Pilar Piñeiro García, **Produción : planificación, programación e control : exercicios resoltos**, Universidade de Vigo, Servizo de Publicacións, 2005

Daniel Arias Aranda, Beatriz Minguela Rata (directores), **Dirección de la producción y operaciones : decisiones operativas**, Pirámide, 2018

Javier Santos, Richard A. Wysk, José Manuel Torres, **Mejorando la producción con lean thinking**, 2, Pirámide, 2015

Recommendations

Subjects that are recommended to be taken simultaneously

Primary wood processing industries/P03G370V01706

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	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language				
Department				
Coordinator				
Lecturers				
E-mail				

----- UNPUBLISHED TEACHING GUIDE -----

IDENTIFYING DATA				
Innovation and development of products in the forest industry				
Subject	Innovation and development of products in the forest industry			
Code	P03G370V01709			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish Galician			
Department				
Coordinator	García-Pintos Escuder, Adela			
Lecturers	Bartolome Mier, Javier García-Pintos Escuder, Adela			
E-mail	adelagpe@uvigo.es			
Web				
General description	(*)Materia que trata sobre os procesos industriais de transformación da madeira, especialmente os que se levan a cabo na fabricación dos produtos finais, así como as técnicas de xestión e mellora continua de a produción			

Competencies	
Code	
C31	Knowledge for the calculation and design of carpentry facilities. Drying, debarking and crushing of wood.
D4	Sustainability and environmental commitment
D6	Organization and planning capacity
D10	Autonomous Learning

Learning outcomes		
Expected results from this subject	Training and Learning Results	
2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances. 3R. 2018 Be conscious of the multidisciplinary context of the engineering. 4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses. 5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial. 7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering. 9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality. 11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality. 13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality. 14R. 2018 Capacity to apply norms of engineering in the his speciality. 15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering. 16R. 2018 general Ideas on economic questions, organisational and of management (how management of projects, management of risks and change) in the industrial and entrepreneurial context. 18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions. 19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general. 20R. 2018 Capacity to work effectively in national and international contexts, individually and in team, and cooperate with the engineers and people of other disciplines. 21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life. 22R. 2018 Capacity to be to the day of the scientific and technological news.	C31	D4 D6 D10

Contents	
Topic	
(*)1.- Materiais tecnificados de madeira	(*)1.1.Taboleiros derivados de madeira 1.2 Perfís lamelados de madeira 1.3 Madeira microlaminada (LVL) 1.4 Madeira reconstituida con tiras (PSL) 1.5 Madeira reconstituida con virutas (LSL) 1.6 Madeira reconstituida con pequenas virutas (OSL) 1.7 Madeira plástico
(*)2.- Compoñentes de madeira	(*)2.1 Cercos e precercos 2.2 Tapajuntas 2.3 Molduras decorativas 2.4 Madeiras torneadas 2.5. Madeira curvada 2.6 Perfís lamelados
(*)3.- Herraxes	(*)3.1 Patas, pés e elementos de apoio- nivelación. 3.2 Elementos de unión e ensamblaxe. 3.3 Bisagras. 3.4 Sistemas de guiado. 3.5 Elementos de instalación e montaxe. 3.6 Cerraduras e pechaduras
(*)4.-Recubrimientos de taboleiros e cantos de madeira.	(*)4.1 Recubrimientos de cantos. 4.1.1 A base de listones de madeira maciza. 4.1.2 A base de chapas de madeira. 4.1.3 A base de láminas de PVC. 4.1.4 A base de papel decorativo. 4.2.- Recubrimientos de taboleiros. 4.2.1 A base de chapa de madeira. 4.2.2 A base de papeis impregnados. 4.2.3 Lamelados. 4.2.4 Lacados.
(*)5.- Acabados en carpintería e mobles	(*)5.1 Introdución. 5.2 Clasificación de os acabados. 5.2.1 Pola función de o verniz. 5.2.2 Pola composición química de o verniz. 5.3 Compoñentes dun acabado. 5.3.1 Disolventes. 5.3.2 Resinas. 5.3.3 Tintes e aditivos. 5.3.4 Cargas. 5.4 Vernices secado uv
(*)6.- Portas de madeira	(*)6.1 Introdución. 6.2 Clasificación das portas. 6.2.1 Pola súa constitución. 6.2.2 Polo aspecto das súas caras. 6.2.3 Pola forma do canto. 6.2.4 Pola aparencia do canto. 6.3 Medidas e tolerancias dunha porta. 6.4 Características da madeira. 6.5 Puertas en función da súa constitución 6.5.1 Puertas á plana. 6.5.2 Puertas de carpintería. 6.5.3 portas de carpintería en relevo. 6.6 Portas especiais 6.6.1 Puertas a resistentes a o lume. 6.6.2 Portas acústicas. 6.6.3 Puertas de seguridade
(*)7.- Fiestras de madeira	(*)7.1 Introdución. 7.2 Elementos que constitúen unha fiestra. 7.2.1 Elementos do oco da fiestra. 7.2.2 Elementos da fiestra. 7.3 Características dunha fiestra de madeira. 7.3.1 Permeabilidad ao aire. 7.3.2 Resistencia ao vento. 7.3.3 Estanqueidad á auga. 7.3.4 Acristalamiento

(*)8.- Chans de madeira	(*)8.1 Entablados 8.2 Tarimas 8.3 Lamparquet 8.4 Parquet multicapa 8.5 Paneis 8.5.1 Parquet taraceado 8.5.2 Parquet industrial 8.5.3 Paneis de deseños históricos 8.5.4 Paneis multicapa 8.6 Entarugado 8.7 Pavimentos de de taboleiro rechapado 8.8 chans lamelados 8.9 Chans madeira plástico (pwc)
(*)9.- Escaleiras de madeira	(*)9.1 Introdución 9.2 Definicións 9.3 Tipoloxía de escaleiras 9.3.1 Tipoloxía estruturais 9.3.2 Tipoloxía por trazado 9.4 Aspectos técnicos no deseño dunha escaleira
(*)10.- Ergonomía e moble	(*)10.1 Conceptos xerais 10.2 Bases científicas na ergonomía 10.3 Implicacións no deseño de mobiliario da postura sedente. 10.4 Táboas antropométricas.
(*)11.- Mobles modulares	(*)11.1 Conceptos xerais 11.2 Materiais mobles modulares 11.3 Compoñentes dos mobles modulares 11.4 Despiece dos mobles modulares
(*)12.- Mobles de madeira maciza.	(*)12.1 Conceptos xerais 12.2 Materiais mobles modulares 12.3 Compoñentes dos mobles modulares 12.4 Despiece dos mobles modulares
(*)13.- Mobles atamborados e outros	(*)13.1 Conceptos xerais 13.2 Materiais mobles modulares 13.3 Compoñentes dos mobles modulares 13.4 Despiece dos mobles modulares
(*)14.- Introdución á innovación e novos produtos	(*)14.1 Conceptos básicos sobre innovación 14.2 A xestión da innovación e a I+D 14.3 Tipos de innovación
(*)15.- Técnicas de traballo en equipo e creatividade	(*)15.1 Creatividade e procesos 15.2 Técnicas para a creación e xestión de innovación de produtos
(*)16.- Fases dun proxecto de desenvolvemento de novos produtos	(*)16.1 Fases dun proxecto de desenvolvemento de novos produtos

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	23	70	93
Autonomous practices through ICT	6	10	16
Laboratory practical	4	6	10
Mentored work	11	18	29
Problem and/or exercise solving	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
Lecturing	(*)Explicación de conceptos teóricos y exemplificacións
Autonomous practices through ICT	(*)Resolución de casos prácticos de deseño de mobles modulares
Laboratory practical	(*)Actividades de aplicación dos coñecementos a situacións concretas e de adquisición de habilidades básicas e procedimentais relacionadas coa materia obxecto de estudo. Desenvolverase nun espazo especial co equipamiento adecuado
Mentored work	(*)O estudante realizará un proxecto de desenvolvemento dun novo produto tanto no aula como de xeito autónomo baixo as directrices e a supervisión do profesor.

Personalized assistance

Methodologies	Description

Lecturing	
Autonomous practices through ICT	
Mentored work	

Assessment			
	Description	Qualification	Training and Learning Results
Lecturing	(*)Asistencia e participación activa nas sesións magistrales	10	
Laboratory practical	(*)Actividades de aplicación dos coñecementos a situacións concretas e de adquisición de habilidades básicas e procedimentais relacionadas coa materia obxecto de estudo.	5	
Mentored work	(*)O estudante realizará un proxecto de desenvolvemento dun novo produto	50	
Problem and/or exercise solving	(*)Proba escrita a final de curso para a avaliación das competencias adquiridas ao longo do curso	35	

Other comments on the Evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Morales Nieto, E., **Innovar o morir : Cómo obtener resultados excepcionales con poca inversión : Innovación, internacionalización, redes comerciale**, Starbok, 2010

Philip Kotler, Gary Armstrong, **Fundamentos de marketing**, 13, Pearson Educación de México, 2017

Francisco Serrano Gómez, César Serrano Domínguez, **Gestión, dirección y estrategia de productos**, ESIC, 2005

Andrés Fernández Romero, **Creatividad e innovación en empresas y organizaciones : técnicas para la resolución de problemas**, Diaz de Santos, 2005

Alexander Osterwalder, Yves Pigneur, **Generación de modelos de negocio : un manual para visionarios, revolucionarios y retadores**, 12, Deusto, 2014

Recommendations

Subjects that continue the syllabus

Environmental Impact/P03G370V01504

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

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	Choose	Year	Quadmester
	6	Optional	4th	2nd
Teaching language	Spanish Galician			
Department				
Coordinator	Cordero Rivera, Adolfo			
Lecturers	Cordero Rivera, Adolfo			
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	
B2	Ability to analyze the ecological structure and function of forest systems and resources, including landscapes.
B3	Knowledge of degradation processes that affect forest systems and resources (pollution, pests and diseases, fires, etc.) and capacity for the use of forest environment protection techniques, forest hydrological restoration and biodiversity conservation .
B7	Ability to solve technical problems derived from the management of natural spaces.
C36	Ability to solve technical problems derived from the management of natural spaces. Conservation of biodiversity.
D2	Ability to communicate orally and written in Spanish or in English
D3	Ability to communicate orally and in writing specifically in the Galician language
D4	Sustainability and environmental commitment
D5	Capacity for information management, analysis and synthesis
D6	Organization and planning capacity
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes	
Expected results from this subject	Training and Learning Results

2R. 2018 Knowledge and understanding of the disciplines of engineering of the speciality, to the necessary level to ascquire the rest of the competitions of the qualifications, including notions of the last advances.	B2 B3 B7	C36	D2 D3 D4
3R. 2018 Be conscious of the multidisciplinary context of the engineering.			D5
4R. 2018 Capacity to analyze products, processes and complex systems in the field of study; to choose and apply the appropriate analytical, of calculation and experimental methods and correctly interpret the results of these analyses.			D6 D8
6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as to select and apply appropriate methods for the project.			
7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering.			
8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality.			
10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study.			
11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality.			
12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.			
14R. 2018 Capacity to apply norms of engineering in the his speciality.			
17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions			
18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions.			
19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general.			
20R. 2018 Capacity to work effectively in national and international contexts, individually and in team, and cooperate with the engineers and people of other disciplines.			
21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life.			
22R. 2018 Capacity to be updated of the scientific and technological news.			

Contents

Topic	
1. The science of conservation.	The origins and brief history of conservationist movements. Principles of conservation biology. Ecology and Environmentalism. Importance of science in conservation.
2. The ecological values and functions of biodiversity.	Genetic, species and ecosystem diversity: the concept of biodiversity. Why we should conserve the species? The intrinsic value of species and their conservation status. The instrumental values and rarity of the species. Ecosystemic values.
3. Biodiversity and stability.	The concept of stability. The diversity-stability debate (a history of this controversy, current studies, compartmentalization, diversity and global change, implications for conservation biology). Retrogression.
4. Ecological principles in the exploitation of natural resources.	The concept of maximum sustainable yield. Principles for the exploitation of resources. Genetic changes in exploited populations. The exploitation of forests. Forest certification (FSC, PEFC).
5. Extinction	The number of species that inhabit the planet. The causes of the rarity of the species. IUCN classification. Estimation of extinction rates. Processes and causes of extinction. Degradation and destruction of habitats. Metapopulation dynamica. Population Viability Analysis (PVA).
6. Management of species and populations.	Management units. In situ and ex situ conservation. Limioting resources. Control of threats. Translocations and artificial breeding. Role of zoos, botanical gardens and museums. Importance of ethology in conservation. Case study: the example of the black-footed ferret.
7. Management and restoration of ecosystems	Principles of ecosystem management. Modified ecosystems (forest exploitation, agricultural ecosystems, aquatic ecosystems). Restoration of ecosystems.
8. Social factors in conservation.	Description of etic values. Valuation of priorities. Cultural changes. Environmental education.
9. The economics of conservation.	Economic evaluation of biodiversity (types of sustainability, decision models in ecological economics, the value of biodiversity). Costs of conservation (method of cost of travel, the method of revealed preferences, an economic and ecological perspective of market). The tragedy of the commons.

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 reserve design: size, dynamism, spatial context, connectivity, buffer zones. Protected natural areas of Galicia.
12. Conservation legislation	International Biodiversity Agreements (Bern, 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 endangered species, Decree 1628/2011 Catalog of alien invasive species) Legislation of Galicia: 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; management plan of the odonate populations of European interest; Reproductive biology and management of Corema album in the Cíes Islands.
Practical 1. Design of Reserves: Testing the species-area relationship.	(*)
Practical 2. Taxonomic principles and characteristics of communities. Its use in the decision-making process on conservation.	(*)
Practical 3. Contingent assessment	Discussion about the social attitudes on conservation issues and valuation of emblematic species
Practical 4. Analysis of the viability of populations: using the vortex program.	(*)
Practical 5. Field lesson. Visit to the Center of Zoogenetic Resources of Galicia.	Study of the systems of conservation of germoplasm of autochthonous cattle breeds.
Practical 6. Field lesson. Visit to the Natural Park of Fragas do Eume.	Contact with the managers of the protected area, to discuss its specific characteristics and problems.
Practical 7. Field lesson. 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 conditions do not allow visiting the islands.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	30	52.5	82.5
Studies excursion	11	16.5	27.5
Mentored work	5	10	15
Computer practices	4	4	8
Problem and/or exercise solving	2	0	2
Essay	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
Lecturing	Lectures in the classroom
Studies excursion	Field lessons
Mentored work	Personal work under supervision
Computer practices	Practical lessons in the computers room

Personalized assistance

Tests	Description
Essay	A sand county almanac, Aldo Leopold. Monographic work on the book

Assessment

	Description	Qualification	Training and Learning Results
Lecturing	They will be evaluated through short answer exams.	65	B2 B7

Studies excursion	They will be evaluated in the examination of the subject through specific questions.	5	B7		
Mentored work	It will be evaluated in the exam of the subject through specific questions or through written reports.	10	B7	C36	
Computer practices	They will be evaluated in the exam of the subject through specific questions or through written reports.	10	B7		D5
Problem and/or exercise solving	They are part of the written exam of the course.	0			
Essay	Delivery of a monographic work on the book "A sand county almanac", by Aldo Leopold. The essay must be submitted one month before the exam date. It must consist of a summary of the book and a section of personal analysis of it.	10			

Other comments on the Evaluation

The competences of the subject will be evaluated in the written exam.

The attendance to the practicals is compulsory.

The unjustified absence of more than one practical implies a negative evaluation. The monographic work on the book by Aldo Leopold is an essential condition for the evaluation, and must be submitted at the most one month before the exam.

Dates of exams:

1st period: 21 May 2020, 12 h

2nd period: 9 July 2020, 16 h

The official dates and any subsequent modification are available on the web http://forestales.uvigo.es/gl/

Sources of information

Basic Bibliography

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

Complementary Bibliography

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

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

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

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

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

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

Recommendations

Subjects that it is recommended to have taken before

Forest Ecology/P03G370V01402

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

Competencies	
Code	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
B3	Knowledge of degradation processes that affect forest systems and resources (pollution, pests and diseases, fires, etc.) and capacity for the use of forest environment protection techniques, forest hydrological restoration and biodiversity conservation .
B13	Ability to design, direct, elaborate, implement and interpret projects and plans, as well as to write technical reports, recognition reports, assessments, appraisals and appraisals.
C9	Ability to know, understand and use the principles of: forestry hydraulics; hydrology and hydrological-forest restoration.
C27	Ability to know, understand and use the principles of: prevention and fight against forest fires.
D4	Sustainability and environmental commitment
D7	Skill in the use of IT tools and ICTs.
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes	
Expected results from this subject	Training and Learning Results

2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances. 3R. 2018 Be conscious of the multidisciplinary context of the engineering. 4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses. 6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project. 7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering. 8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality. 10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study. 11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality. 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality. 13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality. 17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions 18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions. 19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general. 20R. 2018 Capacity to work effectively in national and international contexts, individually and in team, and cooperate with the engineers and people of other disciplines. 21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life. 22R. 2018 Capacity to be to the day of the scientific and technological news.	B1 B3 B13	C9 C27	D4 D7 D8
2R. 2018 Knowledge and understanding of the disciplines of engineering of the speciality, to the necessary level to ascquire the rest of the competitions of the qualifications, including notions of the last advances. 3R. 2018 Be conscious of the multidisciplinary context of the engineering. 4R. 2018 Capacity to analyze products, processes and complex systems in the field of study; to choose and apply the appropriate analytical, of calculation and experimental methods and correctly interpret the results of these analyses. 6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as to select and apply appropriate methods for the project. 7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering. 8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality. 10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study. 11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality. 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality. 14R. 2018 Capacity to apply norms of engineering in the his speciality. 17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions 18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions. 19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general. 20R. 2018 Capacity to work effectively in national and international contexts, individually and in team, and cooperate with the engineers and people of other disciplines. 21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life. 22R. 2018 Capacity to be updated of the scientific and technological news.			

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 glasses. 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 limitacións.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. Revegetación: Techniques, spices, advantages and limitations

Planning			
	Class hours	Hours outside the classroom	Total hours
Laboratory practical	10	20	30
Lecturing	30	30	60
Computer practices	6	6	12
Autonomous problem solving	2	20	22
Studies excursion	6	6	12
Problem and/or exercise solving	1	3	4
Problem and/or exercise solving	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 practical	Resolution of practical cases by students with educational orientation and the use of specific laboratory of materials and equipment
Lecturing	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
Computer practices	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 problem solving	Problem solving and / or autonomous problem solving exercises that students must solve in a personalized way outside the class throughout the course
Studies excursion	Practical exercise management tools and fire fighting equipment
	All competences are type A, which they learn in all methodologies

Personalized assistance

Methodologies	Description
Laboratory practical	
Lecturing	
Computer practices	
Studies excursion	
Autonomous problem solving	

Tests	Description
Problem and/or exercise solving	
Problem and/or exercise solving	

Assessment

	Description	Qualification	Training and Learning	Results
Autonomous problem solving	*Approach of problems that he student has to resolve of personalised form *out of class to *the wide of him course	30	C27	D7
Problem and/or exercise solving	*Approach of questions of *brief answer that he student has to resolve in class in him act of evaluation	21	C27	
Problem and/or exercise solving	*Approach of problems that he student has to resolve in class in him act of evaluation	49	C27	

Other comments on the 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

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

Ricardo Vélez Muñoz, **LA DEFENSA CONTRA INCENDIOS FORESTALES. FUNDAMENTOS Y EXPERIENCIAS**, 5, MCGRAW-HILL, 2009

Complementary Bibliography

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

J.A. Vega, **Manual de queimas prescritas para matogueiras de Galicia**, 1, CMA- Xunta de Galicia, 2001

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	Choose	Year	Quadmester
	6	Optional	4th	2nd
Teaching language				
Department				
Coordinator				
Lecturers				
E-mail				

----- UNPUBLISHED TEACHING GUIDE -----

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	Choose	Year	Quadmester
	6	Optional	4th	2nd
Teaching language	Spanish Galician			
Department				
Coordinator	Bartolome Mier, Javier			
Lecturers	Bartolome Mier, Javier			
E-mail	jbartolome@uvigo.es			
Web	http://www.forestales.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	
C39	Ability to know, understand and use the principles of quality control in the forest industry.
C40	Ability to know, understand and use the principles of industrial safety and hygiene.
D5	Capacity for information management, analysis and synthesis
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes		
Expected results from this subject	Training and Learning Results	
2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances. 3R. 2018 Be conscious of the multidisciplinary context of the engineering. 4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses. 7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering. 8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality. 9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality. 13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality. 14R. 2018 Capacity to apply norms of engineering in the his speciality. 15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering. 16R. 2018 general Ideas on economic questions, organisational and of management (how management of projects, management of risks and change) in the industrial and entrepreneurial context. 17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions 18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions.	C39 C40	D5 D8

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 foresty 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	6	10	16
Studies excursion	4	2	6
Lecturing	34	72	106
Problem and/or exercise solving	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	Seminars of approach and resolution of practical cases with oral presentation
Studies excursion	Knowledge of the implantation of systems of quality in companies of transformation of the wood
Lecturing	Explanation Of theoric concepts and exemplifications

Personalized assistance

Methodologies	Description
Lecturing	
Case studies	

Assessment

	Description	Qualification	Training and Learning Results

Case studies	*Participacion Active in the *resolucion of the supposed *practicos that pose	10	C39 C40
Studies excursion	Presentation of the memory of the visits realised	10	C39 C40
Lecturing	*Paricipacion Active in the debates that pose	10	C39 C40
Problem and/or exercise solving	*Valoracion Of the knowledge of the matter in *funcion to the questions realised	70	C39 C40

Other comments on the Evaluation

Calendar of examinations:

First Announcement: 20 May 2020, 16.00 Hours
Second Announcement: 10 July 2020 16.00 Hours

The official dates and the possible modifications are exposed in the official board of the *EE Forest and in the web

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

Other comments

*N|To

IDENTIFYING DATA				
Chemical industries of the wood, cellulose, pulp and paper				
Subject	Chemical industries of the wood, cellulose, pulp and paper			
Code	P03G370V01805			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	2nd
Teaching language	Spanish Galician			
Department				
Coordinator	Lorenzo Fouz, David			
Lecturers	Lorenzo Fouz, David Ortiz Torres, Luis			
E-mail	davidlorenzofouz@gmail.com			
Web				
General description				

Competencies	
Code	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
B11	Ability to characterize the anatomical and technological properties of wood and non-timber forest raw materials, as well as the technologies and industries of these raw materials.
C37	Knowledge of the basic principles of the chemical transformation of wood and its industrial processes, in particular cellulose and paper.
D2	Ability to communicate orally and written in Spanish or in English
D5	Capacity for information management, analysis and synthesis
D10	Autonomous Learning

Learning outcomes	
Expected results from this subject	Training and Learning Results

2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances.	B1 B11	C37	D2 D5 D10
3R. 2018 Be conscious of the multidisciplinary context of the engineering.			
4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses.			
5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial.			
6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project.			
7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering.			
8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality.			
9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality.			
10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study.			
11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality.			
12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.			
13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality.			
14R. 2018 Capacity to apply norms of engineering in the his speciality.			
17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions			
20R. 2018 Capacity to work effectively in national and international contexts, individually and in team, and cooperate with the engineers and people of other disciplines.			

Contents

Topic

1º Part: chemical Industry of the wood: Industry of the paste and of the paper	1. Paste, paper and cardboard. Requests and sources of fibres *papeleras. Chemical composition of the wood. Behaviour of the fibres *celulósicas. 2. Characteristics of the wood. Effect of the morphology of the fibres on the properties of the paper. Identification of wooden species. 3. The resources of the wood. Measure of the wood for paste. Preparation of the wood for the manufacture of cellulose. Control of quality of the *astillas. 4. Processes of obtaining of pastes. Mechanical pastes, chemical, *semiquímicas and pastes to dissolve. Comparison of pastes and applications of the same. 5. The process to the sulphate. Definition of terms and description of the process *kraft. System of recovery of the chemical products. Chemistry of the process *kraft and variables that affect to the cooking to the sulphate. 6. Teams of cooking. Discontinuous and continuous digesters. *Deslignificación Widespread. 7. Treatment of the pastes: *Desfibrado, elimination of knots, wash, classification of pastes, thickened, pumping, stored, mixed, dried, cut and *apilado. 8. Recovery of the bleaches of cooking. Evaporation. Boiler of recovery. *Caustificación. Calcination. Recovery of by-products. 9. Bleaching of pastes. Sequences *ECF and *TCF. Stages of bleaching. Closing of circuits. 10. Economy and strategy of operation of a factory of pastes. Control of costs. 11. Preparation of the paste for the manufacture of the paper: Disintegration, *refinado, measure and mix of the composition. 12. Utilisation of secondary fibres. Disintegration of the *papelote and *destintado. 13. Additives no fibrous in the manufacture of the paper. 14. Manufacture of the paper splits humid and dry part. 15. Reduction of the aqueous and atmospheric pollution in the industry *celulósica and *papelera
2º Part: Other forest chemical industries	16. Derived of the cellulose. 17. Extracts of the wood and his applications. 18. Resinación. Resin. 19. Sacarificación Of the wood. *Bioetanol. 20. Biorefinerías.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	26	54	80
Laboratory practical	23	20	43
Studies excursion	4	10	14
Case studies	1	5	6
Problem solving	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
Lecturing	*impartira Teaching *magistral with exercises type
Laboratory practical	They made you practise and it presented memory of the same
Studies excursion	They made visit to company
Case studies	*hara Study of cases
Problem solving	*resolveran Problems out of the classroom

Personalized assistance

Methodologies	Description
Lecturing	
Laboratory practical	
Studies excursion	
Case studies	

Assessment

Description	Qualification	Training and Learning Results		
Lecturing	70	B1 B11	C37	
Laboratory practical	10	B11	C37	
Studies excursion	10	B11		D2 D5 D10
Problem solving	10			D2 D5

Other comments on the Evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations

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

Competencies	
Code	
C41	Ability to carry out the professional tasks of the degree in the field of individual and team work, applying, according to the practice in question, some of the techniques and skills that, by way of example and without being exclusive, they are cited in the verification memory.

Learning outcomes	
Expected results from this subject	Training and Learning Results
6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project. 7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering. 9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality. 11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality. 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality. 13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality. 14R. 2018 Capacity to apply norms of engineering in the his speciality. 15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering. 16R. 2018 general Ideas on economic questions, organisational and of management (how management of projects, management of risks and change) in the industrial and entrepreneurial context. 17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions 18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions. 19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general. 20R. 2018 Capacity to work effectively in national and international contexts, individually and in team, and cooperate with the engineers and people of other disciplines. 21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life.	C41

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

Personalized assistance

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

Assessment

	Description	Qualification	Training and Learning Results
External practices		100	C41

Other comments on the 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	Choose	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	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. In particular, it will have to contribute to the development of the following: 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; *b) Capacity to execute the work projected; *c) Capacity to present and defend publicly the *TFG. 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. 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. 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. 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.			

Competencies	
Code	
A1	That students possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context
A2	That students know how to apply acquired knowledge and their capacity to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study
A3	That students are able to integrate knowledge and face the complexity of making judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of their knowledge and judgments
A4	That the students know how to communicate their conclusions -and the knowledge and ultimate reasons that sustain them- to specialized and non-specialized audiences in a clear and unambiguous way
A5	That students have the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.

Learning outcomes

Expected results from this subject	Training and Learning Results
5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial.	A1 A2 A3 A4
6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project.	A5
7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering.	
8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality.	
9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality.	
10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study.	
11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality.	
12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.	
13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality.	
14R. 2018 Capacity to apply norms of engineering in the his speciality.	
15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering.	
16R. 2018 general Ideas on economic questions, organisational and of management (how management of projects, management of risks and change) in the industrial and entrepreneurial context.	
17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions	
19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general.	
21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life.	

Contents

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

Personalized assistance

Assessment

Description	Qualification	Training and Learning Results

Other comments on the Evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Recommendations