



IDENTIFYING DATA

Forest constructions

Subject	Forest constructions			
Code	P03G370V01501			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	3rd	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Riveiro Rodríguez, Belén			
Lecturers	Pece Montenegro, Santiago Riveiro Rodríguez, Belén			
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General description	(*)Principios, Coñecementos e Normas nos que se fundamentan as Construcións Forestais e o deseño de Vías Forestais			

Competencies

Code	
B7	Ability to solve technical problems derived from the management of natural spaces.
B9	Knowledge of hydraulics, construction, electrification, forest roads, machinery and mechanization necessary both for the management of forest systems and for their conservation.
C18	Ability to know, understand and use the principles of: forest constructions and forest roads.
D1	Ability to understand the meaning and application of the gender perspective in the different fields of knowledge and in professional practice with the aim of achieving a more just and egalitarian society
D2	Ability to communicate orally and written in Spanish or in English
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
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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.	B7	C18	D1
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.			D2
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.			D4
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.			D5
9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality.			D6
11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality.			D7
12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.			D8
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.			D9
14R. 2018 Capacity to apply norms of engineering in the his speciality.			D10
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.			
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

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

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

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	1	2
Lecturing	21	42	63
Problem solving	11	22	33
Computer practices	9	27	36
Essay	1	8	9
Objective questions exam	1	2	3
Essay questions exam	2	2	4

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

Methodologies

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

Personalized assistance

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

Assessment

	Description	Qualification	Training and Learning Results
Essay	Along the course students will develop small projects where they will tackle exercises and cases of study that complement the practical sessions. They will serve to verify the acquisition of the competitions CE-18, CG7, CT5, CT6, CT7, CT8, CT9 and CT10.	15	

Objective questions exam	Several tests will take place along the course to verify that the student is acquiring the competences CE-18 and CG9.	10
Essay questions exam	Final written exam to verify competences CE-18, CG7, CG9, CT1, CT2, CT4, CT5, CT6, CT7, CT8, CT9, CT10.	75

Other comments on the Evaluation

The evaluation tests corresponding to "Essays", as well as "Objective questions exam" are framed within the continuous evaluation tests of the subject, whose weight on the total of the subject is 25%. All students must complete a "Final Exam", with a weight on the overall evaluation of 75%. It will be necessary to reach a minimum grade of 4.5 points out of 10 in the exam, so that the continuous assessment grade is added. The student must obtain a final grade equal to or greater than 5 points out of 10 in order to pass the subject.

Those students who officially renounce continuous assessment, will be evaluated in a single final written exam, assuming in this case 100% of the score.

The final evaluation will be held on the official dates approved by the Forest Engineering School. There will be two evaluation opportunities: 1st opportunity, on 01.13.2020 at 16:00h; 2nd opportunity, on 06/24/2020, at 16:00h. Also, students who enroll in the call for "Final de Carrera", will have the final evaluation on 23/09/2019, at 9:00 am.

The official dates and potential changes are published in the main board of the School and at the website <http://forestaes.uvigo.es/gl/>

Sources of information

Basic Bibliography

Complementary Bibliography

M. Vázquez, **RESISTENCIA DE MATERIALES**, 4,
P. Jiménez Montoya, **HORMIGÓN ARMADO**, 1,
Rafael Dal-Ré Tenreiro, **CAMINOS RURALES. PROYECTO Y CONSTRUCCIÓN**, 1,
MINISTERIO DE FOMENTO, **CODIGO TECNICO DE EDIFICACION**, 1,
Ferdinand P. Beer, **MECÁNICA DE MATERIALES**, 1,

Recommendations

Subjects that continue the syllabus

Hydraulics/P03G370V01404
Use of forests/P03G370V01601
Environmental Impact/P03G370V01504
Forest Fires/P03G370V01802
Primary wood processing industries/P03G370V01706

Subjects that are recommended to be taken simultaneously

Forest certification and legislation/P03G370V01505
Forestry machinery/P03G370V01502
Projects/P03G370V01503

Subjects that it is recommended to have taken before

Graphic expression: Graphic expression and cartography/P03G370V01101
Physics: Physics II/P03G370V01202
Mathematics: Overview of mathematics/P03G370V01203
Mathematics: Mathematics and IT/P03G370V01103
Chemistry: Chemistry/P03G370V01204
Topography, remote sensing and geographic information systems/P03G370V01403