



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				
Department	Materials Engineering, Applied Mechanics and Construction			
Coordinator	Riveiro Rodríguez, Belén			
Lecturers	Conde Carnero, Borja 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		
New	B7 B9	C18	D1 D2 D4 D5 D6 D7 D8 D9 D10

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 attention

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.
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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.
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Assessment

	Description	Qualification	Training and Learning Results
Essay	(*)Ao longo do curso realizaranse traballos ou pequenos proxectos nos que se abordarán exercicios e casos de estudo que complementen as sesións prácticas. Servirán para verificar a adquisición das competencias CE-18, CG7, CT5, CT6, CT7, CT8, CT9 y CT10.	15	
Objective questions exam	(*)Realizaranse catro probas ao longo do curso para fixar os coñecementos adquiridos e así verificar la adquisición das competencias CE-18 y CG9.	10	
Essay questions exam	(*)Exame evaluatorio final de verificación da adquisición das competencias CE-18, CG7, CG9, CT1, CT2, CT4, CT5, CT6, CT7, CT8,CT9, CT10.	75	

Other comments on the Evaluation

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

