



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				
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.es/ilanes/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	CG-01: Capacidade para comprender os seguintes fundamentos necesarios para o desenvolvemento da actividade profesional: Biolóxicos.			
B11	CG-11: Coñecemento dos procesos de degradación que afecten aos sistemas e recursos forestais: pragas.			
B16	CG-16: Capacidade para o uso das técnicas de conservación da biodiversidade.			
C34	(*)CE-34: Capacidade para coñecer, comprender e utilizar os principios de: enfermidades e pragas forestais.			
D6	(*)CBI 6: Adquirir capacidade de resolución de problemas.			
D20	(*)CBS 8: Sensibilidade cara a temas ambientais.			

Learning outcomes

Expected results from this subject	Training and Learning Results		
(*)	B1 B11 B16	C34	D6 D20
New	B1 B11 B16	C34	D6 D20

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 (<i>Mycosphaerella pini</i> and <i>M. dearnessii</i>) 9.2 Blight of pine needles (<i>Lophodermium pinastri</i>). 9.3 Mention of <i>Meloderma desmazieri</i>
Topic 10. Diseases of leaves in angiosperms	10.1 Oidium or odium of the oak, <i>Erysiphe alphitoides</i> . 10.2 Spotting of eucalyptus leaves, <i>Mycosphaerella</i> sp. 10.3 Gray mold, <i>Botryotinia fuckeliana</i> = <i>Botrytis cinerea</i>
Topic 11. Diseases of trunk and branches of conifers.	11.1 Cancers: <i>Sphaerosopsis sapinea</i> = <i>Granulodiplodia sapinea</i> ; <i>Nectria cinnabarina</i> = <i>Tubercularia vulgaris</i> . 11.2 Royas: <i>Cronartium flaccidum</i> or white rust of pine. 11.3 Resinous pineal cancer <i>Gibberella circinata</i> = <i>Fusarium circinatum</i> .
Topic 12. Diseases of trunk and branches in Angiosperms.	12.1 Chestnut brown, <i>Cryphonectria parasitica</i> . 12.2 Carbon or carbonaceous disease, <i>Biscogniauxia mediterranea</i> = <i>Hypoxyton mediterraneum</i> . 12.3 Grafiosis of elm. <i>Ophiostoma ulmi</i> , <i>O. novo-ulmi</i>
Topic 13. Root diseases.	13.1 Chestnut ink, <i>Phytophthora cinnamomi</i> . 13.2 In conifers, <i>Heterobasidion annosum</i> . 13.3 Pathogen of numerous species. <i>Armillaria</i> sp.
Topic 14. Diseases caused by nematode viruses and bacteria.	14.1 Pine wood nematode, <i>Bursaphelenchus xylophilus</i>
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: <i>Thaumetopoea pityocampa</i> . 18.2 Insect borers, most representative species: scythes (<i>Ips sexdentatus</i>) cerambícidos (<i>Monochamus galloprovincialis</i>), etc. 18.3 Most representative taxa of sucking insects.
Topic 19. Eucalyptus pests.	19.1 Deflating insects, <i>Gonipterus scutellatus</i> 19.2 Insect borers, <i>Phoracantha semipunctata</i> . 19.3 Sucking insects, <i>Ctenarytaina spatulata</i>
Topic 20. Review some of the most representative pests of garden trees. Mention of the plagues of the chestnut fruit.	
(*) Tema 21. Mención de algunhas pragas en frondosas autoctonas.	(*)21.1 Insectos defoliadores 21.2 Insectos perforadores 21.3 Insectos chupadores

Planning

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

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

Methodologies

	Description
Master Session	Exposition, by the teacher, of the contents of the subject, theoretical bases and / or guidelines of a work to be developed by the students
Laboratory practises	Application of the knowledge of the subject. Learning and handling of basic techniques.
Outdoor study / field practices	Realization of exits to forest ecosystems and / or visits to research centers or companies related to the subject studied.

Personalized attention

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

Assessment					
	Description	Qualification	Training and Learning Results		
Master Session	(*)Exame escrito.- O alumnado debe responder a diferentes cuestións para demostrar os seus coñecementos sobre conceptos teóricos e cuestións prácticas da materia. Constará de preguntas de reposta curta e outras de reposta longa. Exposición por parte do alumnado dun dos temas do programa.	70	B1 B11	C34	D6 D20
Laboratory practises	(*)Avaliación continua das actividades desenvolvidas nas prácticas, así como da memoria ou entrega de exemplares de patoloxía de plantas e/ou un exame práctico que o alumnado deben realizar ao final do curso.	30	B11 B16	C34	D6 D20

Other comments on the Evaluation

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., **Pulgonos 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,

MALLOY 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,

Recommendations

Subjects that it is recommended to have taken before

Biology: Plant Biology/P03G370V01201

Botany/P03G370V01303

Forestry Ecology/P03G370V01402

Forestry/P03G370V01401

Forest entomology and Zoology/P03G370V01305