UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: FOREST INVENTORY
Code: 62321
Type: CORE COURSE
ECTS credits: 6
Degree: 365 - UNDERGRADUATE DEGREE PROGRAMME IN FOREST AND ENVIRONMENTAL ENGINEERING
Academic year: 2023-24
Center: 601 - E.T.S. AGRICULTURAL ENGINEERS AND MOUNTS AB
Group(s): 10
Year: 3
Duration: C2
Main language: Spanish
Second language: English
Use of additional languages:
English Friendly: Y
Web site:
Bilingual: N

Lecturer: **FRANCISCO RAMON LOPEZ SERRANO** - Group(s): **10**

Building/Office	Department	Phone number	Email	Office hours
ETSI AGRÓNOMOS Y DE MONTES; EDIFICIO: Manuel Alonso Peña	CIENCIA Y TECNOLOGÍA AGROFORESTAL Y GENÉTICA	926 05 31 08	fco.lopez@uclm.es	

2. Pre-Requisites

Not established

3. Justification in the curriculum, relation to other subjects and to the profession

Not established

4. Degree competences achieved in this course

Course competences

Code	Description
E23	
G03	Oral and written communication
G05	Organizational and planning skills
G06	Information management capacity
G07	Problem solving
G10	Teamwork
G21	Ability to apply knowledge in practice

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Additional outcomes

6. Units / Contents

Unit 1:
Unit 2:
Unit 3:
Unit 4:
Unit 5:
Unit 6:
Unit 7:
Unit 8:
Unit 9:
Unit 10:

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	E23	1.19	32.13	N	-	
Project or Topic Presentations [ON-SITE]	Individual presentation of projects and reports	E23 G03 G05 G10	0.15	4.05	Y	Y	
Study and Exam Preparation [OFF-	Self-study	E23	1.19	32.13	N	-	

SITE]							
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	G21	0.26	7.02	N	-	
Other off-site activity [OFF-SITE]	Problem solving and exercises	G06 G07 G21	0.56	15.12	Y	Y	
Class Attendance (practical) [ON-SITE]	Lectures	E23 G05 G10 G21	0.15	4.05	N	-	
Writing of reports or projects [OFF-SITE]	Group Work	G05 G07 G10	0.44	11.88	Y	Y	
Other off-site activity [OFF-SITE]	Guided or supervised work	E23	0.15	4.05	N	-	
Group tutoring sessions [ON-SITE]	Group tutoring sessions	E23	0.14	3.78	N	-	
Formative Assessment [ON-SITE]	Assessment tests	E23 G03 G07 G21	0.19	5.13	Y	N	
Study and Exam Preparation [OFF-SITE]	Assessment tests	E23 G03 G07 G21	0.89	24.03	N	-	
Project or Topic Presentations [ON-SITE]	Individual presentation of projects and reports	G03 G05 G10 G21	0.15	4.05	Y	Y	
			0	0	Y	N	
Other off-site activity [OFF-SITE]	Practical or hands-on activities	E23 G05 G10 G21	0.54	14.58	Y	Y	
		Total:	**6**	**162**			
		Total credits of in-class work: 2.23					**Total class time hours: 60.21**
		Total credits of out of class work: 3.77					**Total hours of out of class work: 101.79**

As: Assessable training activity
Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Assessment of active participation	5.00%	0.00%	
Final test	0.00%	70.00%	
Fieldwork assessment	30.00%	30.00%	
Test	65.00%	0.00%	
Total:	**100.00%**	**100.00%**	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject , an ordinary and an extraordinary one (evaluating 100% of the competences).

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

Hours	**hours**
Project or Topic Presentations [PRESENCIAL][Individual presentation of projects and reports]	4
Class Attendance (practical) [PRESENCIAL][Lectures]	4
Writing of reports or projects [AUTÓNOMA][Group Work]	12
Other off-site activity [AUTÓNOMA][Guided or supervised work]	4
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	4
Formative Assessment [PRESENCIAL][Assessment tests]	5
Study and Exam Preparation [AUTÓNOMA][Assessment tests]	4
[]	15

Unit 1 (de 10):

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1

Unit 2 (de 10):

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1
Study and Exam Preparation [AUTÓNOMA][Assessment tests]	1

Unit 3 (de 10):

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1
Study and Exam Preparation [AUTÓNOMA][Assessment tests]	1

Unit 4 (de 10):

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	4
Study and Exam Preparation [AUTÓNOMA][Assessment tests]	3

Unit 5 (de 10):

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	3

Study and Exam Preparation [AUTÓNOMA][Self-study]	3
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	1
Other off-site activity [AUTÓNOMA][Problem solving and exercises]	3
Study and Exam Preparation [AUTÓNOMA][Assessment tests]	2

Unit 6 (de 10):

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	6
Study and Exam Preparation [AUTÓNOMA][Self-study]	6
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	2
Other off-site activity [AUTÓNOMA][Problem solving and exercises]	3
Study and Exam Preparation [AUTÓNOMA][Assessment tests]	5

Unit 7 (de 10):

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Study and Exam Preparation [AUTÓNOMA][Assessment tests]	1

Unit 8 (de 10):

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	4
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	2
Other off-site activity [AUTÓNOMA][Problem solving and exercises]	3
Study and Exam Preparation [AUTÓNOMA][Assessment tests]	4

Unit 9 (de 10):

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	6
Study and Exam Preparation [AUTÓNOMA][Self-study]	6
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	2
Other off-site activity [AUTÓNOMA][Problem solving and exercises]	4
Study and Exam Preparation [AUTÓNOMA][Assessment tests]	6

Unit 10 (de 10):

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	4
Other off-site activity [AUTÓNOMA][Problem solving and exercises]	2
Study and Exam Preparation [AUTÓNOMA][Assessment tests]	1

Global activity

Activities	**hours**
[]	15
Project or Topic Presentations [PRESENCIAL][Individual presentation of projects and reports]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	32
Other off-site activity [AUTÓNOMA][Problem solving and exercises]	15
Class Attendance (practical) [PRESENCIAL][Lectures]	4
Writing of reports or projects [AUTÓNOMA][Group Work]	12
Other off-site activity [AUTÓNOMA][Guided or supervised work]	4
Group tutoring sessions [PRESENCIAL][Group tutoring sessions]	4
Formative Assessment [PRESENCIAL][Assessment tests]	5
Study and Exam Preparation [AUTÓNOMA][Assessment tests]	28
Class Attendance (theory) [PRESENCIAL][Lectures]	32
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	7
Total horas:	162

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
López-Serrano, F.R., José Carlos García González, Eva María Rubio Caballero, José Miguel Sánchez García, Manuela Andrés Abellán, Francisco Antonio García Morote, Marta Isabel Picazo Córdoba, Iván Pérez Anta, Diego Garcés Alonso, Gerardo Alain Marquet García y Joaquín Serena Innerarity	LIDAR terrestre móvil e inteligencia artificial al servicio de una inventariación forestal rápida y precisa	Asociación y Colegio Oficial de Ingenieros Técnicos Forestales y Graduados en Ingeniería Forestal y del Medio Natural.	Madrid	issn:1575-2356	2020	Se expone resumidamente la nueva tecnología y la utilidad en la inventariación forestal.
	http://www.forestales.net/Canales/Ficha.aspx?IdMenu=b6947309-987f-4bff-808d-4e7e974ccaf8&Cod=d9f6914f-1661-49d7-a986-3ec0f2c3da5f&Idioma=es-ES					
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Sébastien Bauwens, Harm Bartholomeus, Kim Calders and Philippe Lejeune	Forest Inventory with Terrestrial LiDAR: A Comparison of Static and Hand-Held Mobile Laser Scanning	MDPI			2016	
Bokalo M, Titus SJ, Wiens DP	Sampling with partial replacement extended to include growth projections				1996	
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De Vries, PG	Sampling Theory for Forest Inventory	Springer-Verlag	BERLIN		1986	
Dirección general de montes caza y pesca fluvial	Instrucciones Generales para la Ordenación de Montes Arbolados	MAPA	Madrid		1971	
Díaz Maroto, I.J., Riesco Muñoz, G	Inventario Forestal	Unicopia.	Lugo.		2001	
Ghosh S, Innes JL.	Comparing sampling strategies in forest monitoring programs				1996	
Gregoire TG, Valentine HT, Furnival GM	Sampling methods for estimating stem volume and volume increment				1987	
López-Serrano, Francisco Ramón	Dasometría : ciencia de la medición forestal	Popular Libros		978-84-932789-3-9	2003	
López-Serrano FR, García-Morote FA, Andrés-Abellán,M	Site and weather effects in allometries: A simple approach				2005	
Martínez Millán FJ, Madrigal Collazo A, Martínez Ramón V	Muestreo Forestal Elemental (Traducción del manual "Elementary Forest Sampling" de Frank Freese, del Servicio Forestal de EE.UU.). 3rd ed.	Fundación Conde del Valle de Salazar (E.T.S.I.Montes).	Madrid		1983	
NETER, John	Applied linear regression models	Irwin		0256070687	1989	
Parde J, Bouchon J.	Dasometría. Versión española de Dendrométrie. Traducido por Prieto Rodríguez, A. y López Quero, M. Ecoly Nationale des Eaux et Forêts (ENGREF). Nancy (Francia)	Paraninfo	Madrid		1994	
Philip MS	Measuring Trees and Forests	CAB INTERNATIONAL	Wallingford (UK).		1994	
Pita Carpenter, Pío Alfonso	El inventario en la ordenación de montes	Instituto Nacional de Investigaciones Agrarias		84-500-5832-5	1973	
F.R. López Serrano, E. Rubio, F.A. García Morote, M. Andrés Abellán, M.I. Picazo Córdoba, F. García Saucedo, E. Martínez García, J.M. Sánchez García, J. Serena Innerarity, L. Carrasco Lucas, O. García González , J.C. García González	Artificial intelligence-based software (AID-FOREST) for tree detection: A new framework for fast and accurate forest inventorying using LiDAR point clouds https://doi.org/10.1016/j.jag.2022.103014	Elsevier B.V.		1569-8432	2022	AID-FOREST is a totally automatic software once launched. AID-FOREST processes very large Lidar point cloud files without any problem. Artificial intelligence has for the first time been used efficiently to detect trees. Tree detectability was over 97% despite the ecosystem visual complexity. Diameter at breast height and stem volume estimations were statistically unbiased.