

**1. General information****Course:** GENETIC IMPROVEMENT AND MANIPULATION IN FOREST SPECIES**Code:** 310766**Type:** CORE COURSE**ECTS credits:** 6**Degree:** 2340 - MASTERS DEGREE PROGRAMME IN FORESTRY ENGINEERING**Academic year:** 2023-24**Center:** 601 - E.T.S. AGRICULTURAL ENGINEERS AND MOUNTS AB**Group(s):** 10**Year:** 1**Duration:** C2**Main language:** Spanish**Second language:** English**Use of additional languages:****English Friendly:** Y**Web site:****Bilingual:** Y**Lecturer:** JOSE ANTONIO FERNANDEZ PEREZ - Group(s): 10

Building/Office	Department	Phone number	Email	Office hours
IDR/Biotecnología	CIENCIA Y TECNOLOGÍA AGROFORESTAL Y GENÉTICA	2611	joseantonio.fperez@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
CG06	Develop techniques and projects in the field of forest genetics
CG08	To integrate the previous knowledge (graduate degree) in a critical way and to relate them so that they can be applied to the study of real situations in the forest area and to propose alternatives.
CG09	Searching for bibliographic references, analysing documentation and processing information from various sources by applying it to problem solving in the field
CG10	Handle information in foreign languages.
CG12	Be able to communicate orally and in writing, both in specialized forums and for non-experts

5. Objectives or Learning Outcomes**Course learning outcomes**

Description

Capacity to design, manage and implement plans and projects for the planning, improvement and sustainable management of forest areas, the landscape and the use of forest resources.

Capacity to design and implement genetic improvement programs with forest species.

Capacity to develop and implement comprehensive management plans for protection against desertification and restoration of eroded and degraded environments

6. Units / Contents

Unit 1:
Unit 2:
Unit 3:
Unit 4:
Unit 5:
Unit 6:
Unit 7:
Unit 8:
Unit 9:
Unit 10:
Unit 11:
Unit 12:
Unit 13:
Unit 14:
Unit 15:
Unit 16:

7. Activities, Units/Modules and Methodology

		Related Competences					
--	--	---------------------	--	--	--	--	--

Training Activity	Methodology	(only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CG08 CG09 CG10 CG12	1.34	33.5	N	-	
In-class Debates and forums [ON-SITE]	Debates	CG08 CG09 CG10 CG12	0.2	5	Y	N	
Project or Topic Presentations [ON-SITE]	Individual presentation of projects and reports	CG06 CG08 CG09 CG10	0.3	7.5	Y	N	
Laboratory practice or sessions [ON-SITE]	Combination of methods	CG06 CG08	0.4	10	Y	Y	
Practicum and practical activities report writing or preparation [OFF-SITE]	Combination of methods	CG06 CG08	0.26	6.5	Y	N	
Progress test [ON-SITE]	Assessment tests	CG08 CG12	0.16	4	Y	N	
Study and Exam Preparation [OFF-SITE]		CG08 CG09 CG10	3.34	83.5	N	-	
Total:			6	150			
Total credits of in-class work: 2.4			Total class time hours: 60				
Total credits of out of class work: 3.6			Total hours of out of class work: 90				

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
Practicum and practical activities reports assessment	10.00%	0.00%	
Test	70.00%	0.00%	
Final test	0.00%	100.00%	
Oral presentations assessment	20.00%	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
Unit 1 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.12
In-class Debates and forums [PRESENCIAL][Debates]	.52
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 2 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 3 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 4 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 5 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 6 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.15
Laboratory practice or sessions [PRESENCIAL][Combination of methods]	5
Practicum and practical activities report writing or preparation [AUTÓNOMA][Combination of methods]	3.25

Progress test [PRESENCIAL][Assessment tests]	2
Study and Exam Preparation [AUTÓNOMA][]	13.62
Unit 7 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 8 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 9 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 10 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 11 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 12 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Laboratory practice or sessions [PRESENCIAL][Combination of methods]	5
Practicum and practical activities report writing or preparation [AUTÓNOMA][Combination of methods]	3.25
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 13 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 14 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 15 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.09
In-class Debates and forums [PRESENCIAL][Debates]	.3
Study and Exam Preparation [AUTÓNOMA][]	4
Unit 16 (de 16):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2.12
In-class Debates and forums [PRESENCIAL][Debates]	.43
Project or Topic Presentations [PRESENCIAL][Individual presentation of projects and reports]	7.5
Progress test [PRESENCIAL][Assessment tests]	2
Study and Exam Preparation [AUTÓNOMA][]	13.88
Global activity	
Activities	hours
In-class Debates and forums [PRESENCIAL][Debates]	5
Laboratory practice or sessions [PRESENCIAL][Combination of methods]	10
Class Attendance (theory) [PRESENCIAL][Lectures]	33.5
Practicum and practical activities report writing or preparation [AUTÓNOMA][Combination of methods]	6.5
Project or Topic Presentations [PRESENCIAL][Individual presentation of projects and reports]	7.5
Progress test [PRESENCIAL][Assessment tests]	4
Study and Exam Preparation [AUTÓNOMA][]	83.5
Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description

Pâques, L.C. (ed.)	Forest Tree Breeding in Europe: Current State-of-the-Art and Perspectives	Springer	Berlin	9789400761452	2013
A. K. Mandal & G. L. Gibson (edito	Forest Genetics and Tree Breeding Cbs Hb		New Delhi	9788123905716	1998
K.T. Parthiban/N. Krishnakumar/P.S. Devanand	Tree Breeding and Improvement: Theory and Techniques	Scientific Publishers	Jodhpur	9789389412833	2020
Filippos A. (Phil) Aravanopoulos (Ed.)	Genetics and Genomics of Forest Trees	MDPI	Basel	978-3-03897-299-0	2018
https://doi.org/10.3390/books978-3-03897-299-0					