



POLITÉCNICA

INTERNATIONAL  
CAMPUS OF  
EXCELLENCE

COORDINATION PROCESS OF  
LEARNING ACTIVITIES  
PR/CL/001



E.T.S. de Ingeniería de Montes,  
Forestal y del Medio Natural

# ANX-PR/CL/001-01

## LEARNING GUIDE

### SUBJECT

**133000269 - Scientific Research And Communication**

### DEGREE PROGRAMME

13AD - Master Universitario En Ingeniería De Montes

### ACADEMIC YEAR & SEMESTER

2024/25 - Semester 2

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DRAFT VERSION

## 1. Description

### 1.1. Subject details

<b>Name of the subject</b>	133000269 - Scientific Research And Communication
<b>No of credits</b>	3 ECTS
<b>Type</b>	Optional
<b>Academic year of the programme</b>	First year
<b>Semester of tuition</b>	Semester 2
<b>Tuition period</b>	February-June
<b>Tuition languages</b>	English
<b>Degree programme</b>	13AD - Master Universitario en Ingenieria de Montes
<b>Centre</b>	13 - E.T.S. De Ingenieria De Montes, Forestal Y Del Medio Natural
<b>Academic year</b>	2024-25

## 2. Faculty

### 2.1. Faculty members with subject teaching role

<b>Name and surname</b>	<b>Office/Room</b>	<b>Email</b>	<b>Tutoring hours *</b>
Ramon Perea Garcia-Calvo (Subject coordinator)		ramon.perea@upm.es	Tu - 10:00 - 11:30 Th - 15:30 - 20:00
Rosa Ana Lopez Rodriguez		rosana.lopez@upm.es	Tu - 09:30 - 11:30 W - 09:30 - 11:30
Jesus Rodriguez Calcerrada	Forestales	jesus.rcalcerrada@upm.es	M - 08:00 - 15:00
Juan Antonio Martin Garcia	Patología	juan.martin.garcia@upm.es	Tu - 09:00 - 14:00 Tu - 15:00 - 18:00

\* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

## 2.2. Research assistants

Name and surname	Email	Faculty member in charge
Gambra Caravantes, Daniel	daniel.gambra@upm.es	Perea Garcia-Calvo, Ramon
Salomon Moreno, Roberto Luis	roberto.salomon@upm.es	Rodriguez Calcerrada, Jesus

## 3. Prior knowledge recommended to take the subject

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### 3.1. Recommended (passed) subjects

The subject - recommended (passed), are not defined.

### 3.2. Other recommended learning outcomes

- Inglés (nivel medio)

## 4. Skills and learning outcomes \*

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### 4.1. Skills to be learned

CB06 - Poseer y comprender conocimientos que aporten una base u oportunidad de ser originales en el desarrollo y/o aplicación de ideas, a menudo en un contexto de investigación

CB09 - Que los estudiantes sepan comunicar sus conclusiones y los conocimientos y razones últimas que las sustentan a públicos especializados y no especializados de un modo claro y sin ambigüedades

CB10 - Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

CT01 - Habilidades de comunicación escrita y oral

CT02 - Integrar los conocimientos previos (propios de grado) de manera crítica y relacionada de forma que se puedan aplicar al estudio de situaciones reales y a la propuesta de alternativas

CT04 - Capacidad crítica para el análisis, la síntesis y el aprendizaje mediante el intercambio de opiniones, presentando argumentos sólidos y estructurados

CT06 - Búsqueda bibliográfica, análisis de documentación y tratamiento de la información procedente de diversas fuentes y de su análisis y síntesis aplicándola a la resolución de problemas complejos

CT07 - Perfeccionar el conocimiento oral y escrito de la lengua inglesa

CT08 - Creatividad, capacidad de observación, generación de hipótesis y planteamiento de problemas experimentales

CT10 - Valores humanos positivos: Respeto a los derechos humanos fundamentales; los principios de igualdad de oportunidades, accesibilidad universal y no discriminación; y los valores propios de una cultura de paz y de valores democráticos. Compromiso con estos derechos, principios y valores, motivación, actitud positiva y entusiasta; ética, integridad y honestidad profesional

## 4.2. Learning outcomes

RA178 - Saber utilizar motores de búsqueda de información bibliográfica de relevancia y probado rigor científico y opiniones fundamentadas en las evidencias suministrada por datos muestrales

RA179 - Que los estudiantes puedan transmitir información, ideas, problemas y soluciones a un público tanto especializado como no especializado

RA134 - Capacidad para realizar búsquedas bibliográficas, consultar y utilizar con criterio bases de datos y otras fuentes de información, para llevar a cabo simulaciones con el objetivo de realizar investigaciones sobre temas complejos de su especialidad

RA184 - Conocer si existen diferencias significativas en las funciones de distribución, medias, varianzas, coeficientes de correlación y asociación ecológica

RA132 - Conocimiento con sentido crítico del amplio contexto multidisciplinar de la ingeniería y de la interrelación que existe entre los conocimientos de los distintos campos

RA189 - Elaborar hipótesis y predicciones científicas en base al conocimiento existente

RA133 - Capacidad y destreza de alto nivel para proyectar y llevar a cabo investigaciones experimentales, interpretar datos con criterio y extraer conclusiones

RA177 - Saber emitir juicios críticos y opiniones fundamentadas en las evidencias suministrada por datos muestrales

\* The Learning Guides should reflect the Skills and Learning Outcomes in the same way as indicated in the Degree Verification Memory. For this reason, they have not been translated into English and appear in Spanish.

## 5. Brief description of the subject and syllabus

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### 5.1. Brief description of the subject

This course aims to give a first taste of scientific understanding by enhancing the curiosity and creativeness of students through project-based learning. Students will learn how to select interesting and promising scientific questions to further develop research hypotheses and predictions that will increase their chance of success in applying for grants, proposals or publishing scientific articles. In addition, students will work on their own experimental design and learn how to collect data in a scientifically-controlled manner in the field and in the lab. Importantly, great part of the course will be devoted to enhancing communication and networking skills by producing attractive figures, titles, posters and presentations for the general audience, and by creating and using websites, blogs and other social media platforms.

### 5.2. Syllabus

#### 1. Scientific research

- 1.1. Is this science or not? The scientific method
- 1.2. Literature review and search engines
- 1.3. How to choose a good question. Grants and proposals
- 1.4. Establishing hypotheses and predictions
- 1.5. Basics of experimental design
- 1.6. Principles of data collection. Fieldwork
- 1.7. Scientific writing

#### 2. Scientific communication

- 2.1. The scientific article. Attractive titles and figures
- 2.2. Hook the audience. Oral and poster presentations.
- 2.3. Popular science for general audience
- 2.4. Professional networking and science in the social media

## 6. Schedule

### 6.1. Subject schedule\*

Week	Type 1 activities	Type 2 activities	Distant / On-line	Assessment activities
1	<p><b>Introduction to science.</b> Duration: 01:30 Lecture</p> <p><b>Search engines. Literature review.</b> <b>Selection of questions.</b> Duration: 01:00 Laboratory assignments</p>			
2	<p><b>Review of questions</b> Duration: 01:00 Cooperative activities</p> <p><b>Establishing hypotheses and predictions</b> Duration: 01:30 Lecture</p>			
3	<p><b>Review of hypotheses and predictions</b> Duration: 01:00 Cooperative activities</p> <p><b>Introduction to experimental design</b> Duration: 01:30 Lecture</p>			
4	<p><b>Experimental design and data collection</b> Duration: 01:30 Lecture</p>	<p><b>Fieldwork and labwork</b> Duration: 08:00 Laboratory assignments</p>		
5	<p><b>Material and methods</b> Duration: 02:30 Laboratory assignments</p>			
6				<p><b>Student's presentations on the question and hypotheses/predictions</b> Individual presentation Progressive assessment Presential Duration: 02:30</p>
7	<p><b>Introduction to Scientific communication</b> Duration: 01:00 Lecture</p> <p><b>Scientific Writing. Articles, proposals, popular science</b> Duration: 01:30 Cooperative activities</p>			

8	<b>Scientific writing: Proposals and review of projects</b> Duration: 02:30 Laboratory assignments			
9	<b>Scientific writing. Review of project</b> Duration: 02:30 Cooperative activities			
10	<b>Science for general audience</b> Duration: 01:00 Lecture  <b>Poster presentation. Flash presentations</b> Duration: 01:00 Lecture  <b>Poster/pentachart</b> Duration: 01:30 Cooperative activities			
11				
12	<b>Professional networking. Social media</b> Duration: 01:00 Lecture  <b>Professional networking. Social media</b> Duration: 01:30 Laboratory assignments			
13				<b>Poster and pentachart presentation</b> Individual presentation Progressive assessment Presential Duration: 02:30
14				
15	<b>Review of written text and oral presentation</b> Duration: 02:30 Cooperative activities			
16				<b>Student's presentations and debate on the topic chosen. Writing and oral communication</b> Individual presentation Progressive assessment Presential Duration: 02:30
17				<b>Final Exam</b> Written test Global examination Presential Duration: 01:30

Depending on the programme study plan, total values will be calculated according to the ECTS credit unit as 26/27 hours of student face-to-face contact and independent study time.

\* The schedule is based on an a priori planning of the subject; it might be modified during the academic year, especially considering the COVID19 evolution.



## 7. Activities and assessment criteria

### 7.1. Assessment activities

#### 7.1.1. Assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
6	Student's presentations on the question and hypotheses/predictions	Individual presentation	Face-to-face	02:30	30%	5 / 10	CB06 CT02 CT04 CT06 CT08
13	Poster and pentachart presentation	Individual presentation	Face-to-face	02:30	30%	5 / 10	CB06 CB09 CT01 CT04 CT07 CT08 CT10
16	Student's presentations and debate on the topic chosen. Writing and oral communication	Individual presentation	Face-to-face	02:30	40%	5 / 10	CB06 CB09 CB10 CT01 CT02 CT04 CT06 CT07 CT08 CT10

#### 7.1.2. Global examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	Final Exam	Written test	Face-to-face	01:30	100%	5 / 10	CB06 CB09 CT01 CT02 CT07 CT08

### 7.1.3. Referred (re-sit) examination

No se ha definido la evaluación extraordinaria.

## 7.2. Assessment criteria

Progressive assessment:

This course is based on continuous assessment where students will have 3 individual presentations with a debate on the topic chosen by each student. The following items will be considered to evaluate these activities: the soundness of the scientific evidences that support the argumentation. Poster and oral expression. Clarity and originality in data presentation

Final examination (only for those choosing this option instead of the continuous assessment or failed in the progressive assessment):

The students will take a written exam. The quality of the written expression, the creativity, the knowledge and the soundness of the arguments used to answer essay questions will be taken into consideration.

## 8. Teaching resources

### 8.1. Teaching resources for the subject

Name	Type	Notes
Hofmann, A. H. (2014). Scientific writing and communication: papers, proposals, and presentations. Oxford Univ. Press.	Bibliography	
Martin, J. (2017). Science communication in 140 characters: use of twitter by STEM students. In: Proceedings of The Australian Conference on Science and Mathematics Education (formerly UniServe Science Conference) (p.	Bibliography	

90).		
Ruxton, G., & Colegrave, N. (2011). Experimental design for the life sciences. Oxford University Press.	Bibliography	
IUFRO. Interconnecting Science, Forest and People. <a href="https://www.iufro.org/science/task-forces/former-task-forces/communication/">https://www.iufro.org/science/task-forces/former-task-forces/communication/</a>	Web resource	
Greenhouse. Fieldwork areas	Equipment	
Field and lab data on ecology	Others	

## 9. Other information

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### 9.1. Other information about the subject

This course meets the following Sustainable Development Goals (SDGs), also known as the Global Goals, adopted by the United Nations in 2015:

SDG3 (GOOD HEALTH AND WELL-BEING), SDG4 (QUALITY EDUCATION), SDG5 (GENDER EQUALITY), SDG8 (DECENT WORK AND ECONOMIC GROWTH), SDG13 (CLIMATE ACTION), and SDG16 (PEACE, JUSTICE AND STRONG INSTITUTIONS).