

COURSE PROGRAM

"METHODOLOGY, ORGANIZATION AND PROJECT MANAGEMENT"

Academic Year: 2024/2025

Identification and characteristics of the course							
Code	5012	202	ECTS	Credits	6		
Course name	Meth	nodology, (Organi	zation and Proje	ect Management		
(English)							
Course name (Spanish)	Meto	odología, C)rganiz	ación y Gestión	de Proyectos		
Degree	Degi	egree in Forest Engineering and Natural Environment					
programs				<u> </u>			
Faculty/School	Univ	ersitary Ce	enter o	f Plasencia			
Semester	7	Type cours	of se	Specific of For	est exploitations		
Module	Com	mon modu	le to f	orest science			
Matter	Natu	Iral Enviro	nment	Engineering			
			l	_ecturer/s			
Name		Office		E-mail	Web page		
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Manuel Moya Ign	асю			elmi@unex.es	uex/centros/plasencia/centro/p rofesores		
Subject Area							
Department							
Coordinating							
Lecturer							
(If more than							
one)							
			Con	npetencies*			
CB2 – That stu manner and tha through the el- problems within	dent at th abora thei	can app ey have t ation and r area of s	ly the the sk l defe study.	ir knowledge ills required t ense or argur	to their job in a professional hat are usually demonstrated nents and the resolution of		
CB3 – That stud	ent r	nust shov	v their	ability to gath	ner and interpret relevant data		
(within their ar	ea o	f study) i	to ma	ike judgments	that include a reflection on		
relevant issues of a social, scientific, or ethical nature.							
CB4 – That stuc	lent	can trans	mit inf	formation, idea	as, problems, and solutions to		
both a specialized and non-specialized audience.							
CB5 – That stu	CB5 – That student has developed those learning skills needed to undertake						
further studies v	with a	a high deo	gree o	f autonomy.	-		
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^{*} The sections concerning competencies, course outline, educational activities, teaching methodologies, learning outcomes and assessment systems must conform to that included in the ANECA verified document of the degree program.

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CG13 – Ability to design, direct, develop, implement, and interpret projects and plans, as well as for redacting technical reports, recognition reports, appraisals, expert reports, and valuations.

- CT1 Ability of analysis and synthesis
- CT2 Ability for organization and planning
- CT3 Ability to communicate orally and writing
- CT4 Ability to manage information and learn autonomously

CT5 – Ability to reason critically

CT6 – Ability to solve problems and take decisions

CT7 – Ability to adapt to new situations (creativity)

CT8 – Ability for teamwork

CE25 – Ability to know, understand and use the principles of Methodology, organization, and project management.

Contents

Course outline*

The subject is useful for the student to let him know the way engineering projects should be approached and to carry out a work like a preliminary project which facilitates the development of a Final Degree Project. It is structured in the following thematic blocks: I) Project typology. II) Basic aspects of Project theory. III) Formulation Methodology. IV) Project Evaluation. V) Project execution planning methodology. VI) Project morphology.

Course syllabus

THEMATIC BLOCK I: Project Typology

Name of lesson 1: Project typology

Contents of topic 1: Engineering Projects, Technical Studies and Research Studies. Description of the practical activities of lesson 1: Practice n^o 1. Project Typology. Learning of Final Degree Project typology developed at the Degree of Forest Engineering and of Natural Environment. Formal presentation of a Final Degree Project. Distribution of a Final Degree Project in pairs and exposition of the positive and negative aspects detected in it from a formal point of view.

THEMATIC BLOCK II: Basic aspects of Project theory

Name of lesson 2: **Basic aspects. Project concept (I)** Contents of topic 2: Forest Projects. Promoter. Public and private projects. Value criteria. Description of the practical activities of lesson 2: none Name of lesson 3: Basic aspects. Project concept (II) Name of lesson3: Conceptual scheme of the project. Current situation. Alternative solutions. Execution. Basic characteristics of a project. Description of the practical activities of lesson 3: none Name of lesson 4: The Project cycle (I) Name of lesson 4: The Project cycle. Stages of a project. Previous studies. Description of the practical activities of lesson 4: none Name of lesson 5: The Project cycle (II) Name of lesson 5: The Project cycle (II) Name of lesson 5: Stages of a project. Viability Study or Preliminary Project. Description of the practical activities of lesson 5: none Name of lesson 6: The Project cycle (III)

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Name of lesson6: Engineering projects. Execution. Investment. The Project cycle according to United Nations. Stages and decisions at the project cycle. Uncertainty. Description of the practical activities of lesson 6: none

THEMATIC BLOCK III: Formulation Methodology

Name of lesson 7: Project Formulation Methodology

Name of lesson7: Project formulation methodology. Preparation for formulation. Conditions of the Promoter. Value criteria. Analysis and diagnosis of the initial situation. Description of the practical activities of lesson 7: none

Name of lesson 8: Future situation without the project

Name of lesson8: Current situation. Prospective studies. Frequent problems in rural development projects. Analysis and problems, conditions, and opportunities: diagnosis. Diagnosis objective.

Description of the practical activities of lesson 8: none

Name of lesson 9: Objectives and goals

Name of lesson9: Project synthesis. Purpose, objective, and goal. Alternative solutions. Multicriteria analysis. Level of development of the Project Goals.

Description of the practical activities of lesson 9: Practice n^o 2. Multicriteria analysis. Learning of the two more frequently used multicriteria analysis methodologies worldwide: the weighted sum and ELECTRE methods. The students will conduct an exercise during the lecture to solve a practical case study of the weighted sum method. At the same time, in pairs, they must carry out an analysis of alternatives using the ELECTRE method which they must submit in a PDF format document through the virtual campus. The theoretical explanation will have been previously provided to them during the scheduled time for the lecture.

Name of lesson 10: Process Engineering (I)

Name of lesson10: Productive plan. Productive program. Productive process. Tasks schedule. Need definition table.

Description of the practical activities of lesson 10: none

Name of lesson 11: Process Engineering (II)

Name of lesson11: Needs satisfaction table. Implementation.

Description of the practical activities of lesson 11: none

THEMATIC BLOCK IV: Project Evaluation

Name of lesson 12: Project Evaluation (I)

Name of lesson12: The evaluation process. Financial evaluation methodology. Basic concepts. Real terms. Update. Basic Evaluation Hypotheses.

Description of the practical activities of lesson 12: none

Name of lesson 13: Project Evaluation (II)

Name of lesson13: Costs and benefits of a project. Profitability indices. Sensitivity analysis.

Description of the practical activities of lesson 13: none

Name of lesson 14: Project Evaluation (III)

Name of lesson14: Project financing. Calculation and development of loans. Project financing: assumptions. Inflation in the evaluation of projects.

Description of the practical activities of lesson 14: none

Name of lesson 15: Project Evaluation (IV)

Name of lesson15: Example of financing evaluation of projects.

Description of the practical activities of lesson 15: Practice n^o 3. Financing evaluation of projects. An exercise of financing evaluation will be developed during the lecture. The

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student will solve it by using the most common profitability indices used. In addition, the students will work with an Excel sheet which will allow them developing a financing evaluation and it will be delivered for grade as part of the continuous evaluation of the subject.

THEMATIC BLOCK V: Project execution planning methodology

Name of lesson 16: **Project execution planning: monitoring and control.** Name of lesson16: Introduction to planning methods. People involved in the work. Need for programming. Critical path methods. Stages for the elaboration of the Network. Basic concepts. PERT method: construction and definitions.

Description of the practical activities of lesson 16: Practice n^o 4. Work planning. During the lecture a work planning exercise will be solved by calculating a PERT graph and a Gantt diagram. In addition, the student will learn the use of MS-Project at a basic level. This software is commonly used by companies in this sector for programming engineering Works.

THEMATIC BLOCK VI: Project morphology

Name of lesson 17: **Project morphology (I). Descriptive Memory and Attachments to Memory.**

Name of lesson17: Project documents. General structure of an execution project. Generalities. Memory writing methodology. Project memory index.

Description of the practical activities of lesson 17: none

Name of lesson 18: **Project morphology (II). Attachments to Memory (I).** Name of lesson18: Administrative background and legal framework. Previous technical studies. Media data. Justification of adopted solutions. Structural calculations. Stakeout. Environmental Impact and corrective measures. Work planning. Financing evaluation. Description of the practical activities of lesson 18: none

Name of lesson 19: **Project morphology (III). Attachments to Memory (II).** Name of lesson19: Price justification. Attachment to Memory index.

Description of the practical activities of lesson 19: none

Name of lesson 20: Project morphology (IV). Planes

Name of lesson20: Planes. Scale. Drawing Systems. Formats. Ordination. Types. Description of the practical activities of lesson 20: none

Name of lesson 21: Project morphology (V). Tender documents

Name of lesson21: Generalities. Titles: I.- Of a technical nature; II.- Of a facultative nature. III.- Of economical nature. IV.- Of legal nature.

Description of the practical activities of lesson 21: none

Name of lesson 22: Project morphology (VI). Budget

Name of lesson22: Generalities. Documents: Measurements; Price Tables n^o 1 y 2; Partial budgets; Material execution budget; Tender base budget; Budget for knowledge of the Administration.

Description of the practical activities of lesson 22: Practice n^o 5. Budget. The student will learn the use of Presto at a basic level. It is a software commonly used by companies in the sector for preparing budgets in engineering projects.

Name of lesson 23: Health and Security Study

Name of lesson23: Legal framework. Concepts. R.D. 1627/1997.

Description of the practical activities of lesson 23: none

Name of lesson 24: Realization of a pre-project

Name of lesson24: realization of a practical work

Description of the practical activities of lesson 24: realization of a practical work in

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groups of up to 6 people to develop a pre-project without reaching the maximum detail. The students will have to apply the different methodologies previously explained. They will upload a document in PDF format to the virtual campus and they will have to defend it orally afterwards.

	Educational activities *							
Student worklo hours by less	oad in son	Lectures	P	Practical	activitie	es	Monitoring activity	Homework
Lesson	Total	L	HI	LAB	COM	SEM	SGT	PS
1	5	2,5			1,5			1
2	2	1						1
3	2,5	1,5						1
4	2,5	1,5						1
5	2	1						1
6	4	2						2
7	2,5	1,5						1
8	2,5	1,5						1
9	4	2			1			1
10	2	1						1
11	2	1						1
12	3,5	1,5						2
13	3,5	1,5						2
14	3	1						2
15	6				3			3
16	10,5	1			7,5			2
17	2,5	1,5						1
18	2	1						1
19	2	1						1
20	2	1						1
21	2	1						1
22	8	1			6			1
23	3	2						1
24	45						4	41
Assessment	26	4						22
**								
TOTAL	150	34			19		4	93
L: Lectures (85 students) HI: Hospital internships (7 students) LAB: Laboratory or field practices (15 students) COM: Computer room or language laboratory practices (20 students) SEM: Problem classes or seminars or case studies (40 students) SGT: Scheduled group tutorials (educational monitoring, ECTS type tutorials) PS: Decroped study, individual or group work and reading of hibliography.								
Teaching Methodologies*								
 Master class Autonomous preparation 	ses (exp s stude of repo	lanation of nt work (s	f the su study c tc.)	ibject b of the i	y the te material	acher) provic	led, literature	e searches,

3) Resolution, analysis and discussion of exercises and problems

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^{**} Indicate the total number of evaluation hours of this subject.



- 4) Case studies
- 5) Use of the Virtual Campus
- 6) Realization, exposition and defense of Works and projects
- 7) Theoretical-practice activities (bibliographic Works, laboratory practices, practices in computer rooms, field works)
- 8) Project Based Learning (PBL)
- 9) Monitoring of learning activities (single or by groups)

Learning outcomes *

- A) The expected learning results for the subject in the verified memory of the title are the following ones:
 - Know how to propose engineering projects knowing all the stages of the Project cycle that must be covered, since they will have to apply later throughout their professional life.
 - Know how to structure an engineering Project with all the documents: memory, planes, tender documents, and budget.
 - Handle with ease the technical concepts of the Project methodology.
 - Know how to carry out economical and financial feasibility studies for projects.
 - Learn how to correctly approach the work planning.
 - Correctly carry out the measurements and the budget of a project.
- B) The learning results within the E<u>NAEE</u> framework (*European Network for Accreditation of Engineering Education*) expected for the subject are the following ones:

1. Knowledge and understanding

1.4 Awareness of the multidisciplinary context of engineering.

3. Engineering projects

3.1. The ability to apply their knowledge to plan and carry out projects that meet previously specified requirements.

3.2. Understanding of the different methods and the ability to apply them.

5. Practical application of engineering

5.2. The ability to combine both theory and practice to solve engineering problems.

5.4. Awareness of the implications, technical or non-technical, of the practical application of engineering.

6. Transversal skills

6.1. Function effectively both individually and as a team.

- 6.3. Demonstrate awareness of the responsibility of the practical application of engineering, the social and environmental, and commitment to professional ethics, responsibility, and standards of the practical application of engineering.
- 6.5. Recognize the need and can voluntarily develop continuous learning.

Assessment systems *

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Evaluation criteria

Description:

- Demonstrate the acquisition and understanding of the main concepts of the subject.
- Solve problems by applying theoretical and practical knowledge.
- Ability to discussion and critical analysis.
- Actively participating in problem solving in lecture.

Activities and evaluation tools

A) CONTINUOUS EVALUATION

The subject will be evaluated with the following **distribution**:

- Objective test (exam): 55%
- Course work (preliminary project): 35%
- Practices: 10%

For the evaluation of each of the parts of the subject, the following considerations will be considered:

- a) A compulsory work will be carried out in groups made up of a maximum of six (6) people. This work will consist of the preparation of a preliminary Project. With it the theoretical knowledge acquired throughout the subject will be put into practice.
- b) The **authorship** of the course work presented by the students must correspond to them. Hence, in case it is found to be false, it would automatically mean the failure of the same and, therefore, of the subject.
- c) To demonstrate the authorship of the work presented and verify the learning level acquired by the student, an oral examination will be carried out. In addition, in this continuous evaluation modality, the monitoring allowed to the teacher responsible of the subject will be valued with up to 5% of the of the final grade assigned to the work.
- d) In case the falsity of the authorship of the course work by the student is proven, the corresponding academic authorities will be informed so that they can adopt the protocol measures they deem appropriate.
- e) The no completion of the course work by any student will automatically imply the **impossibility of passing the subject** until it is submitted. However, the student will be able to carry out the exams of the subject throughout the academic year
- f) The attendance at the laboratory seminars will be mandatory and practices leading to the completion of the preliminary project will be carried out in them. The minimum attendance to them must be 80% to pass the subject and with these the student will be able to obtain up to a 10% of the final grade of the subject. Each practice will be evaluated, and the student must demonstrate that he has assimilated the concepts explained in it. If, due to duly justified reasons a student cannot attend the minimum percentage required for the practices, he/she may pass the subject, although the total grade will be calculated on 9.0 points instead of 10 (that is, the 10% of the final grade of the subject assigned to the corresponding practices will not be considered).

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- g) The maximum grade that can be obtained with the course work will be 35% of the total grade for the subject.
- h) The **exam** will consist of **two parts**, one theoretical and the other practical, and will account for **55%** of the total grade for the subject.
- i) The **theoretical part** of the exam will account for **70% of the grade**, while the remaining **30%** will correspond to the **practical part**.
- j) The theoretical part of the exam will consist of several questions that may be short-answer questions, questions to be developed o a mixture of both. In the evaluation of the answers, the clarity of the exposition, the student's capacity for synthesis, the correct presentation of the exam and the good use of the language will be considered.
- k) The practical part of the exam will consist of the completing one or more exercises. In assessing them, special attention will be paid to obtaining correct results, although their proper approach will be positively valued case the exercise cannot be completed.
- In the exam the questions where two or more misspellings are registered will not be considered. Therefore, the student must pay attention to the wording of the answers provided.
- m) The student will be able to release part of the subject if the minimum grade obtained in said part (theoretical or practical) of the exam is equal or greater than 7.00 points (out of 10 points that can be obtained in it). The released part of the subject will only be maintained during the corresponding academic year. Hence, if a student has released part of the subject but has not passed it in said course, in the following academic year must retake the subject with the whole topics.
- n) Each part of the exam will be evaluated on 10 points, subsequently assigning to each of them the percentages referred to in points *f*, *g*, *h*, and *i*. The minimum grade that must be obtained in the different parts evaluated in the subject (practices, course work, theoretical exam, and practical exam) will be 4 points out of 10, so that they can be compensated. The student will be able to pass the course if the final average grade is at least 5 points.

B) ALTERNATIVE GLOBAL EVALUATION

In this modality, the subject will be evaluated with the following **distribution**:

- Objective test (exam): 55%
- Course work (preliminary Project): 35%
- Alternative exam to practices: **10%**

For the evaluation of each of the parts of the subject in this modality, the following considerations will be considered:

1. <u>Alternative exam to the practices of the subject</u>: Based on article 4.6 of the UEx assessment regulations, students will have the option to an alternative test, together with the final theoretical exam. In this test, the learning results that are contemplated in the continuous evaluation through the course work and the practices of the subject will be evaluated. To take advantage of this evaluation modality, the student must demonstrate knowledge of the computer programs Presto (for budgeting), MS-Project (for the programming of Works) and a modified Excel sheet (for the financial evaluation of a Project), as well as knowing the

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development of the E.L.E.C.T.R.E. for multicriteria analysis. For this, a practical test will be carried out in which the student must demonstrate the use of one or more of these applications, or the development of the ELECTRE method, which will mean **10%** of the final grade.

- 2. <u>Course work</u>: students who take advantage of this modality must prepare the course work have done it completely autonomously. They are not obliged at any time to present or consult any of the parts of which the work is composed during its completion to the responsible teacher of the subject. Once the final document has been delivered, an oral presentation will be conducted. This test will be evaluated with **35%** of the final grade that can be obtained in the subject.
- 3. <u>Exam</u>: it will consist of a theoretical objective test (**70%** of the final exam grade, which is, in turn, **55%** of the final grade of the subject) and a practical one (**30%** of the final exam grade, which, in turn, it is **55%** of the final grade for the subject) which consist of short questions, questions to be developed or a mixture of both (theoretical part) and the resolution of one or more practical cases on any aspect that has been explained in class along the course.
- 4. All the tests that have been mentioned in this modality will take place on the dates scheduled for the official examination calls.

"IMPORTANT: the choice of the global evaluation modality corresponds to the students, who will be able to carry it out during the first quarter of the semester of teaching the subject. For this, the teacher will manage these requests through a specific space created for this in the Virtual Campus. In case of absence of express request by the student, the modality assigned will be continuous evaluation".

Bibliography (basic and complementary)

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Other resources and complementary educational materials

List of resources and spaces for teaching:

- 1) <u>Large Group:</u> Regular classroom 2-4 (Audiovisual room), 2nd floor "Audiovisuals room". It is equipped with a video cannon, desktop computer and blackboard.
- 2) Computer practices: Regular classroom 2-5 (Cartoteca), 2nd floor.
- 3) Equipment and materials for practices
- Modified Excel sheet for carrying out financial evaluation practices for projects.
- MS-Project 2016 Program to conduct Works programming.
- Presto Program v. 22 for budgeting
- *Material and notes of the subject available in the Virtual Campus of the UEx.

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