



Universidad
de Huelva

Faculty: School of Engineering

GENERAL SPECIFICATIONS

Year 2023-24

Bachelor in Forestry and Natural Environment Engineering

Subject Data

Name

Selvicultura

English name

Silviculture

Code

606510208

Code

606510208

Hours

Time distribution

Time distribution

Time distribution

Time distribution

ECTS:6

Standard group	Small groups			
	Classroom	Lab	Practices	Computer classroom
3.5		1.5	1	0.0

Departments:

Agroforestry Sciences

Agroforestry Sciences

Knowledge areas:

Agroforestry Engineering

Environmental Technologies

Year:

2nd

Semester

2nd

ANEXO I

TEACHING STAFF

Name:	E-mail:	Telephone
Juan M. Domingo Santos	juan.domingo@uhu.es	959217715
Reyes Alejano Monge	ralejano@uhu.es	959217503
*Calzado Carretero, Anabel * Lecturer coordinator of the module but not teaching in the English version	carrete@uhu.es	959217548
Others Data (Tutoring, schedule...)		
Tutoring hours for Juan M. Domingo-Santos Tuesday: 13:00 - 14:30 h Wednesday: 11:30 - 14:30 & 18:30 - 20:00 Time table available in the ETSI website and at the Moodle platform		

ANEXO I

SPECIFIC INFORMATION OF THE COURSE

I. Contents description:

I.1 In English:

- Silvicultural basis, species survey and different silvicultural situations, main silvicultural treatments: planning and execution.
- Silvicultural projects.

This module is focused on silvicultural basics, working with main concepts related to forest stands and forest dynamics. Main silvicultural treatments will be dealt with, namely regeneration, cuttings and thinning, as well as their planning and execution by using practical simulations. Real examples of forests from Andalusia, other regions of Spain and other countries are used in the course. Students will work with books and presentations as well as other formats of information like pictures, videos, pieces of news, software, etc.

I.2 In Spanish:

- Bases selvícolas, reconocimiento de especies y situaciones selvícolas, principales tratamientos selvícolas: planificación y ejecución.
- Proyectos de Selvicultura.

En esta asignatura se estudian las bases de la Selvicultura, trabajando en conceptos básicos de caracterización de masas forestales y dinámica de bosques a distintos niveles (incluyendo teoría, participación del alumnado en prácticas, debates y conferencias externas). Se estudian los principales tratamientos selvícolas, tanto cortas de regeneración como de mejora, y su planificación y ejecución a través de ejemplos prácticos. En toda la asignatura se utilizan numerosos ejemplos de sistemas forestales andaluces, españoles y de otros países, que se visualizan a través de fotografías, vídeos, noticias, programas, etc..

2. Background:

2.1 Situation within the Degree:

This subject provides the scientific and technical bases for the sustainable management of forests, thus, it is a key module within the degree. The subject requires knowledge of other basic sciences (Ecology, Zoology, Botany, Statistics, etc.) and applied sciences (Dendrometrics and Inventory) for its correct understanding and application. Silviculture is the founding for drafting planning projects of forests, focused on the production of wood, cork, pine nuts, fruit, etc., as well as conservation (Protected Areas) and protection (preventive actions against forest fires or pests and diseases) along with its practical application (management).

2.2 Recommendations

To take this module we recommend students to have a background in some of these subjects: Forest Mensuration and Forest Inventory, Forest Ecology, Forest Botany, and Forest infrastructures and mechanization, as an important basis for the best understanding of the subject. However the most important things to take this course are love for the forest and interest to learn about it.

ANEXO I

3. Objectives (as result of teaching, or skills or abilities and knowledge):

By the end of this course students will understand the theoretical foundations of Silviculture and the principles of Forest Management in temperate/Mediterranean forests (Skills CB2 and CB5). They will also develop team-working and decision making skills, facing different management situations in practical cases (Skills G02 and G05). They will acquire problem solving capacities based on real data (Skills G01 and CB2).

Working on case studies, students will acquire the capacities and abilities that will allow them to make decisions about forest management, and to solve the problems arising from the application of forest planning and silviculture. They will learn how to apply knowledge to professional work by means of field trips, seminars with technicians and debates (Skills CB2, CB5 and CT2).

As cross skills, throughout the course, students must develop a growing sensitivity for environmental issues (G16 competence) and a knowledge and improvement in the field of ICTs, by using computer programs to solve problems based on field data, work on case studies using computer means, bibliographic searches from specialized pages, use of forestry applications and pages and tools designed to assist in forest management.

4. Skills to be acquired

4.1 Specific Skills:

C11: Silviculture

Planning and managing the sustainable use of timber and non-timber forest resources. Inventories of forest resources and its application in Silviculture.

4.2 General, Basic or Transversal Skills:

CB2: The students know how to apply their knowledge to their work or vocation in a professional way. They should also possess the skills that are usually demonstrated through the elaboration and defense of arguments and in problem solving within their area of study.

CB5: The students have developed those learning skills required to undertake further studies with a high degree of autonomy.

G01: Ability to solve problems.

G02: Ability to take decisions.

G05: Ability to work in a team.

G16: Sensitivity for environmental issues.

TC2. Develop a critical attitude, being able to analyse and synthesize.

5. Training Activities and Teaching Methods

5.1 Training Activities:

- Lectures on the module theoretical contents.
- Problem solving
- Practice sessions in lab or computer room
- Field practices and field visits to get a close view of forest professional activities.
- Academic activities conducted by the teachers: seminars, presentations, work on assignments, debates, group tutorials, evaluation and self-evaluation activities.
- Student individual work

ANEXO I

5.2 Teaching Methods::

- Lectures in a participative environment
- Practice sessions in labs or computer room.
- Field practices sessions in small groups.
- Problem solving and practical exercises.
- Group or individual tutorials (direct interaction student-teaching staff)
- Course assignments: Proposal, development, tutoring and presentation
- Seminars and Guest Lectures
- Assessment, exams

5.3 Development and Justification:

Lectures on the theoretical basics of Silviculture, using Powerpoint presentations, including case studies (competences CB2). These case studies are selected by the lecturer to be solved by the students, including guided questionnaires (quizzes) (Competences C11, CB2, CB5, G02, G16 y TC2).

Practical activities designed to allow students to become familiar with different software and web applications that will be useful in the practice of Silviculture. (Competences CB2, CB5, G01, G02, G05 and G16).

Field trips to see "live" the silvicultural systems and forest management in the province of Huelva and in other Spanish regions (a one-day trip in the province of Huelva plus a week trip to another Spanish area). (Competences C11, CB2, CB5, G02, G05, G16 and TC2).

Two debates organized and lead by the students. (Competences TC2, CB2, CB5, G01, G02, G05 and G16).

Quizzes written by the students throughout the semester.

A guest lecture and a seminar given by a Forest Engineer working in a Silviculture related organization. (Competences TC2, CB2, CB5, G02 and G16).

Students will work in teams (competence G05) in solving problems posted by the lecturer, where they will need to merge basic knowledge of the subject with other related domains as Botany or Forest Mensuration, managing forest data and taking management decisions that will be discussed at the end of the session (Competences CB2, CB5, G01, G02, G05 and G16).

A Silviculture related assignment to be planned and developed with tutorial assistance; the assignment must be presented at the end of the semester. (Competences CB2, CB5,TC2, G01, G02, G05 and G16).

6. Detailed Contents

Lesson 1. What is Silviculture?

- Historical review
- Definition, aims and relevance of Silviculture
- Links between Silviculture and other sciences
- Some data about forest in Spain, Europe and the World

Lesson 2. Concepts of regeneration

- Regeneration as a process
- Regeneration by vegetative methods
- Regeneration from seed
- Choosing between natural and artificial regeneration
- Use of exotic species

Lesson 3. Silvicultural systems

- Silvicultural system as a plan for management
- Even and uneven-aged systems
- Reproduction methods
- Determining growth

Lesson 4. Thinning

- Introduction
- Crown canopy classes and temperament
- Thinning intensity
- Thinning methods
 - Low thinning
 - Crow thinning
 - Mechanical thinning
- Thinning plan

Lesson 5. Clearcutting

- Definition and characteristics
- Steps to follow in the planning and the carrying out of a clearcutting
- Classes of clearcutting
- Diminishing the impacts on landscape and ecology in clearcutting
- Values and limitations of clearcutting
- Some examples of clearcutting in Spain

Lesson 6. The shelterwood method

- Definition
- Characteristics
- Selecting Seed trees
- Determining an appropriate level of residual stocking
- Removal cutting and seedling damage

Lesson 7. Uneven aged reproduction methods

- The character of selection system
- Characterizing conditions in selection system stands
- Defining a residual structure
- Applying selection system

ANEXO I

- Uneven aged reproduction methods
 - Single tree selection method
 - Group selection method
- Conditions for its application
- Applications

Lesson 8. Other treatments

- 8.1. Pruning
 - Natural and artificial pruning
 - Artificial pruning classes
 - Practical applications

7. Bibliography

7.1 Basic Bibliography:

Nyland, R.D. 2002. Silviculture. Concepts and Applications. Mc Graw Hill. Series in Forest Resources.

7.2 Additional Bibliography:

Bravo, F., Le May, V., Jandl, R., Von Gadow, K.(Eds.). 2008. Managing Forest Ecosystems: The Challenge of Climate Change. Springer

Daniel, T.W.; Helms, J.A.; Baker, F.S. 1979. "Principles of Silviculture". Ed. Mc Graw Hill.

De Turkheim, B., Bruchiamacchie. 2005. La Futaie irrégulière. Edisud.

Hawley, R.; Smith, D. 1982. "Silvicultura práctica". Ed. Omega.Barcelona.

Kelty, M., Larson, B., Oliver, CH. 1992. The Ecology and Silviculture of Mixed-Species Forests. Kluwer Academic Publishers. Dordrecht, Boston, London.

Matthews, J.D. 1989. "Silvicultural systems". Oxford Science Publications. Oxford.

O'Hara, K.L. 2014. Multiaged silviculture.Oxford University Press.

Oldeman, R.A.A. 1990. "Forests: Elements of Silvology". Springer- Verlag. Berlín.

Puettmann, K.J.; Coates, K.D., Messier, C. 2008. A critique of Silviculture. Managing for Complexity. Island Press

Ren, H (ed). 2013. Plantations. Biodiversity, carbon sequestration and Restoration. Environmental Research Advances. Nova Publishers

Smith, D.M. 1986. "The practice of Silviculture". Second edition. John Wiley and sons. Nueva York.

West, P.W. 2006. Growing Plantation Forests. Springer.

ANEXO I

8. Systems and Assessment Criteria

8.1 System for Assessment:

- Exams on theoretical lessons and problem solving
- Practical activities (quizzes et other) delivery
- Assignment presentation and delivery.
- Class involvement.

8.2 Assessment Criteria and Marks:

8.2.1 Examinations Convocatory I

Students will be able to choose between being qualified through continuous evaluation or through a single final evaluation. In order to take the single final evaluation, the student, in the first two weeks of teaching, or in the two weeks following registration (whatever happen the latest), must notify the lecturer by email. In the event that a student, taking the continuous evaluation, could not get 100% of the grade in the ordinary call II, they will be able to opt for the single final evaluation.

Continuous assessment

The student's final grade will be calculated taking into account the results obtained in the following activities:

Exam on theoretical lessons and problem solving

The exam will consist of two parts: one corresponding to the theory and another to the part of problems. In the theory part, multiple choice questions or short (quiz) questions may be asked. Part of this exam may be discharged by delivering quizzes and workshop practical work. The weight in the final grade is 70% (of which 30% may be discharged by quizzes-workshops). In this exam, the degree of acquisition of skills C11, CB2, CB5, G01 and G02 will be assessed.

Delivery of practical work

At the end of the course, or before if agreed with the course coordinator, the students will deliver a report on the practices carried out. In this section, the follow-up of practices and field trips will be evaluated. The weight in the final grade is 10% and contributes to assess the capacities CB2, B5, G01, G02, G05, G16 and CT2.

Delivery and presentation of reports or written assignments

In this section, all those works that are proposed throughout the course will be evaluated, either in theoretical classes, or through the Moodle platform. The weight in the final grade is 20% of the final grade and contributes to assess the capacities CB2, CB5, G01, G02, G05, G16 and CT2.

The final grade will be calculated taking into account the indicated weightings, establishing a minimum of 35% of achievement in each of the parts to pass the course.

Class involvement and attendance will be assessed as an extra value, to improve up to 10% the score.

Students can be appraised by a single theoretical and practice exam in case they apply for it within the first month of class

Final results will be given in terms of a numerical scale between 0 and 10 (including tenths), with the corresponding qualitative ratings below:

- ≤4.9: Fail (D)
- 5.0 - 6.9: Pass (C)
- 7.0 - 8.9: Pass with Merit (B)
- 9.0 - 10: Distinction (A)

Students graded with Distinction can be awarded "With Honors"; the number of students awarded "With Honors" cannot exceed 5% of the students enrolled in the subject in the academic year (unless the number of students enrolled is lower to 20, in which case one distinction can be awarded). In case there are more students graded "Distinction" than the maximum number that can be awarded "With Honors", it will be given to the highest total score; if there is equality as well, the students will take an oral test to break the tie.

ANEXO I

The grading system is subject to the Bachelor's Degree Exam Regulations of the University of Huelva (Normativa de Evaluación para las Titulaciones de Grado de la Universidad de Huelva). Please refer to:
<http://www.uhu.es/sec.general/Normativa/Texto_Normativa/Normativa_de_Evaluacion_grados.pdf>.
In particular, please note that makeup exams (exámenes de incidencias) and other special circumstances will be subject to article 19 of these regulations.

8.2.2 Examinations Convocatory II

Students who have passed any of the activities included in the Ordinary Call 1 (examination convocatory I) do not have to do them again for this call, counting the qualification already obtained in the parts passed. Students who wish to opt for 100% of the grade will be assessed following the "single final assessment" grading scheme (8.3 Single Final Evaluation).

8.2.3 Examinations Convocatory III

The module will be assessed following the "single final assessment" grading scheme (8.3 Single Final Evaluation).

ANEXO I

8.2.4 Extraordinary Convocatory

The module will be assessed following the "single final assessment" grading scheme (8.3 Single Final Evaluation).

8.3 Single Final Evaluation:

Single final assessment

For the students choosing to be assessed by this way, the student's final grade will be evaluated on the basis of a single theory/problems exam, standing for 100% of the score. The exam will consist of two parts: one corresponding to the theory and another to the part of problems. In the theory part, multiple choice questions or short questions may be asked. In this exam, the degree of acquisition of skills C11, CB2, CB5, G01 and G02 will be assessed.