

COURSE INFORMATION

SILVICULTURE

Code number: 606510208
Degree in Forestry and Environmental Engineering
Department: Agroforestry Sciences
Academic Year: 2017-2018
Compulsory course. 2nd year
Second semester: 1.5 hours per session, 2 sessions per week
6 ECTS

Link to Spanish counterpart: <http://www.uhu.es/etsi/guia-de-asignatura/?codigo=606510208>

TEACHING STAFF

Prof.: Juan M. Domingo Santos
Department: Agroforestry Sciences
Office: The Saltés Building, room STPB-52, La Rábida Campus
Phone: +34 959 217517
E-mail: juan.domingo@uhu.es
Office hours:

First Semester: Tuesday: 17:30-18:30; Wednesday 17:30-18:30 (El Carmen Campus); Thursday 9:30-12:30 (La Rábida Campus)

Second Semester: Wednesday 11:30-14:30 (El Carmen Campus); Tuesday 9:30-11:30; Thursday 12:00-14:30 (La Rábida Campus)

PROGRAMME/SYLLABUS

1. DESCRIPTION

Silviculture is the science and technique focused on forest care taking. We try to understand forest composition, growth, conservation and regeneration. This course covers the silvicultural fundamentals of Forestry Systems, working with concepts such as Silviculture in an ecological context, the characteristics of forest stands and forest dynamics. Silvicultural systems are differentiated, to further diagnosis. Special attention is given to the main reproduction methods, thinning, and pruning, as well as practical simulations for planning and executing these techniques. Real examples of forests in Andalusia, Spain, and other countries are used throughout the course, via pictures, videos, news items, software, etc.

2. PREREQUISITES

It is advisable to have studied, or have a background in some forestry subjects: Forest Mensuration and Forest Inventory, Forest Ecology or Forest Botany, as an important basis for better understanding the subject.

3. OBJECTIVES/LEARNING OUTCOMES

By the end of this course students will understand the theoretical foundations of Silviculture and to the principles of Forest Management of temperate/Mediterranean forests. 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.

4. COMPETENCES

C11; CB2; CB5; G01; G02; G05; G16; T01; T02

5. TEACHING METHODOLOGY

This subject will include:

Lectures about basics of Silviculture, using Powerpoint presentations and explaining case studies.

Case studies selected by the lecturer to be solved by the students.

Practical activities designed to allow students to become familiar with different software and web applications that will be useful in the practice of Silviculture.

Field trips to see in first hand the silvicultural systems and forest management in the province Huelva and another Spanish region (a one-day trip in the province of Huelva plus a week trip to another Spanish area).

Two debates organized and lead by the students.

Quizzes written by the students throughout the semester.

A seminar on Dendrochronology by a PhD student.

A Silviculture project to be designed by working groups of three students, for presentation at the end of the semester.

6. 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

- Life cycle of trees, stands and forests
- Regeneration natural strategies
- Technical approach to regeneration

Lesson 3. Silvicultural systems

- Forest structures
- Forest systems. Main classes at global and regional levels
- Balanced forests
- Rotation and yield

Lesson 4. Thinning

- Forest density: definition, indicators
- Types of thinning
- Thinning appraisal
- Rotation and yield
- Case studies

Lesson 5. Clearcutting

- Definition
- Issues
- Types of clearcutting
- Rotation and yield

- Case studies

Lesson 6. The shelterwood Method

- Definition
- Issues
- Types of shelterwood regeneration and harvesting systems
- Rotation and yield
- Case studies

Lesson 7. Uneven aged reproduction methods

- Definition
- Issues
- Types of uneven structure regeneration and harvesting systems
- Rotation and yield
- Case studies

7. 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.
- Nyland, R.D. 2002. Silviculture. Concepts and Applications. Mc Graw Hill. Series in Forest Resources.**
- 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

8. ASSESSMENT

Assessment will include:

- An examination of students' knowledge of theory and case studies
- A presentation and defense of students' Silviculture project and reports
- Quizzes written by the individual students

The exam will be graded out of 6 points. Quizzes will be graded out of 1.5 points. The presentation and defense of the Silvicultural Project will be graded out of 2.5 points. A pass is achieved with an overall total of 5 points and above.

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)

The total number of distinctions 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)

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 make-up exams and other special circumstances will be subject to article 19 of these regulations.'