

<b>DEPARTMENT</b>	Scienze Agrarie e Forestali
<b>ACADEMIC YEAR</b>	2014-2015
<b>DEGREE COURSE</b>	<b>MSc SCIENZE FORESTALI ED AMBIENTALI</b>
<b>COURSE</b>	APPLIED SILVICULTURE AND FOREST PLANTATION TECHNIQUES
<b>ARRANGEMENT INTO MODULES</b>	No
<b>NUMBER OF MODULES</b>	
<b>SCIENTIFIC GROUP</b>	AGR/05
<b>TEACHER</b>	Dr. Sebastiano Cullotta
<b>NUMBER OF CREDITS</b>	6
<b>NUMBER OF HOURS NECESSARY TO ACHIEVE FULL LEARNING</b>	90
<b>NUMBER OF TEACHING HOURS</b>	60
<b>EXAMS TO PASS BEFORE</b>	None
<b>YEAR OF THE COURSE</b>	1
<b>LOCATION OF THE COURSE</b>	Indicated in the Class schedule
<b>COURSE ARRANGEMENT</b>	Lectures, Practical exercises, Field training
<b>ATTENDANCE</b>	Recommended
<b>EVALUATION METHOD</b>	Final oral examination and evaluation of the practical exercise assigned
<b>RATING OF EXAMINATION</b>	Mark ranging between 18 and 30
<b>SEMESTER</b>	Second
<b>CALENDAR OF EDUCATIONAL ACTIVITIES</b>	According to the calendar published before beginning the course
<b>STUDENTS RECEIVING</b>	On Monday at 9-11 a.m. (to confirm according to the lesson timetable)

#### **EXPECTED LEARNING OUTCOME**

##### **Knowledge and understanding skills**

Broad knowledge on the auto-ecology of most important Italian tree species. A wide knowledge and capability to analyze stand-forest functions and relate them to the most suitable silviculture approach, for both natural and artificial forest stands.

##### **Ability to apply knowledge and comprehension**

The ability to apply the principles and techniques of the theoretical silviculture to specific Mediterranean forest systems and other wooded lands. With the aims to increase the stability and resilience of a forest stand, the capability to suppose and outline complex silviculture practices according to the main forest functions.

##### **Ability to judge**

To be able to understand most important forest and pre-forest dynamic of different vegetation tiers, and relate them to the appropriate and sustainable silviculture approach. Ability to collaborate to specific sectorial projects.

##### **Ability to communicate**

The ability to use specific terminology related to the applied silviculture and the forest management of most important Mediterranean forest systems. The ability to communicate with colleagues and different technicians, showing most important compositional, dendrometric and structural characters of a forest stand. Thus, the ability to indicate practices and techniques of the silviculture for specific forest sites.

##### **Ability to learn**

Ability and autonomy to update their knowledge by the consultation of both technical and scientific documents of the forest sector. The potential capability to continue the university formation by specific post-graduate courses (master, seminar, etc.) of the forestry sector.

#### **OBJECTIVES**

Main objectives of this course are the analysis of ecological and stand-structural characters of most important Mediterranean and Italian forest types as basis for the application of silviculture treatments in both natural and artificial forest stands. With special reference to the Southern Italian and Mediterranean forest stands, useful indications will be given for the evaluation of the effect of silviculture treatments on the forest stand dynamic and on the renaturalization processes of plantation and degraded forest covers. The analysis of the auto-ecology of most important Italian and Mediterranean forest trees represents a basic aim of this course, as well as an in depth examination of silviculture techniques and practices for pure and mixed stands. The identification and formulation of complex forest management techniques, that consider the forest multi-functionality and the increasing of the

Mediterranean forest resilience to climate change, represent target points of this course.

Scheduled hours	TOPICS
1	Overview of the course; introduction and main aims; textbooks and didactic materials.
4	The Italian forest facts: forest resources, tree species and distribution of forest categories at national level.
2	Main objectives and approaches of the applied Mediterranean silviculture: productive silviculture and conservative silviculture; plantation and arboriculture.
2	Main aspects of the silviculture applied to the subalpine forest belt: <i>Picea abies</i> and <i>Larix-Pinus cembra</i> forests.
1	The applied silviculture to the mountain vegetation belt:
3	The beech forests: autoecology, distribution, silviculture, products and management problems. High-forest and coppice treatments (even-aged and un-even aged stands; simple coppice, coppice with standards, selection coppice). The beech coppice conversion to high-forest.
3	The Calabrian pine ( <i>P. nigra</i> ssp. <i>laricio</i> ) forests: autoecology, distribution, silviculture, products and management aspects. The traditional silviculture treatments of <i>laricio</i> pine stands of Mt Etna: timber and non-timber forest products.
2	Main aspects regarding the fir ( <i>Abies alba</i> ) forests: autoecology, distribution, silviculture, and management problems. The traditional high-forest clearcutting with artificial post-regeneration.
1	The other secondary tree species of the Mediterranean-mountain forest vegetation belt.
1	The applied silviculture to the basal-hilly vegetation belt:
3	The chestnut forests: autoecology, distribution, silviculture, products and other management aspects. The <i>selva castanile</i> and the different coppice choices.
4	The submediterranean deciduous-oak forests: autoecology and distribution of most important <i>Quercus</i> species ( <i>Q. petraea</i> , <i>Q. robur</i> , <i>Q. cerris</i> , <i>Q. pubescens</i> ), silviculture, products and management aspects.
1	The applied silviculture to the Mediterranean vegetation belt:
4	The holm oak ( <i>Quercus ilex</i> ) forests and other wooded lands (OWL): autoecology, distribution, silviculture, products and other management aspects. The traditional coppice practices and products.
3	The cork oak ( <i>Q. suber</i> ) forests and other wooded lands (OWL) types: autoecology, distribution, silviculture, products and other management aspects. The traditional cork production: techniques and uses.
2	The Mediterranean OWL: mediterranean maquis by shrubs and secondary tree species. Main forest management aspects.
3	The Mediterranean pine forests ( <i>P. halepensis</i> , <i>P. pinea</i> , <i>P. pinaster</i> ): autoecology, distribution, silviculture, products and management aspects. Traditional silviculture treatments: timber and non-timber forest products.
4	Mediterranean forest plantation and silviculture: historical and current importance in the forest landscape. Most important plantations: the Mediterranean pines and the eucalyptus stands.
2	Preliminary analysis for the realization of new forest plantations in Mediterranean environment.
4	New forest plantations: site analysis, species selection, preparatory plantation techniques.
2	New forest plantations: plantation and post-plantation techniques.
<b>Practical applications</b> 8	Field excursion in a representative Sicilian forest landscape according to forest types and management aspects. Data sampling in forest, dendrometric-structural analysis and discussions on the silviculture options.
<b>Suggested books</b>	Bernetti G. (1995). <i>Selvicoltura speciale</i> . UTET, Torino Bernetti G. (2007). <i>Botanica e selvicoltura</i> Accademia Italiana di Scienze Forestali. Coppini, Firenze Camerano P., Cullotta S., Varese P. (a cura di) (2011). <i>Strumenti conoscitivi per la gestione delle risorse forestali della Sicilia. Tipi Forestali [Forest Types]</i> . Regione Siciliana Cullotta S., Fantoni I. (2011). <i>Caratteristiche dei boschi della Sicilia [Main characters of forest of Sicily]</i> . In: Hofmann A. et al. (a cura di), <i>Strumenti conoscitivi per la gestione delle risorse forestali della Sicilia. Sistema informativo forestale</i> . Regione Siciliana: pp. 62-99. Other didactical materials