



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Scienze Agrarie, Alimentari e Forestali
<b>ACADEMIC YEAR</b>	2016/2017
<b>BACHELOR'S DEGREE (BSC)</b>	FORESTRY AND ENVIRONMENTAL SCIENCES
<b>SUBJECT</b>	FOREST ECOLOGY
<b>TYPE OF EDUCATIONAL ACTIVITY</b>	B
<b>AMBIT</b>	50124-Discipline forestali ed ambientali
<b>CODE</b>	18804
<b>SCIENTIFIC SECTOR(S)</b>	AGR/05
<b>HEAD PROFESSOR(S)</b>	LA MANTIA TOMMASO    Professore Ordinario    Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	
<b>CREDITS</b>	8
<b>INDIVIDUAL STUDY (Hrs)</b>	136
<b>COURSE ACTIVITY (Hrs)</b>	64
<b>PROPAEDEUTICAL SUBJECTS</b>	
<b>MUTUALIZATION</b>	
<b>YEAR</b>	2
<b>TERM (SEMESTER)</b>	1° semester
<b>ATTENDANCE</b>	Not mandatory
<b>EVALUATION</b>	Out of 30
<b>TEACHER OFFICE HOURS</b>	<b>LA MANTIA TOMMASO</b> Monday    09:00    13:00    Studio Prof. La Mantia, Dip. SAAF, Viale delle Scienze Ed. 4 , Stanza 0037 Tuesday    09:00    13:00    Studio Prof. La Mantia, Dip. SAAF, Viale delle Scienze Ed. 4 , Stanza 0037

DOCENTE: Prof. TOMMASO LA MANTIA

<b>PREREQUISITES</b>	To have knowledge in plant physiology, chemistry and soil science
<b>LEARNING OUTCOMES</b>	<p>Knowledge and comprehension: acquiring the scientific bases of forest ecology. Ability to use the specific language. Ability to evaluate the different relationships among the components of a natural system.</p> <p>Making judgments: ability to assess the implications and results of proposed management activities in the wood. Be able to assess their own mistakes in the technical and cultivation choices as well as the performance of the woods.</p> <p>Communication skills: ability to support the importance and highlight the economic and environmental impact of silvicultural operations also to a non-expert audience.</p> <p>Learning skills: ability to acquire updated information by reading scientific and technical publications related to the forest management and forest ecology. Ability to attend both second-level degree courses and industry-related seminars.</p>
<b>ASSESSMENT METHODS</b>	<p>1) One midterm written tests and one final. Their structure includes: a) a comprehensive set of closed questions (matching and multiple choice).</p> <p>2) An oral exam in addition (optional) or in place of the two written tests. In the first case, the examinees must answer specific questions on subjects for which they gave wrong answers during the written test and the exam is to improve the evaluation acquired with written tests. In the second case, the examinees must answer at least two / three questions posed orally, on all topics covered in class, with reference to the recommended text books.</p> <p>Final assessment aims to evaluate whether the student has knowledge and understanding of the topics, has acquired interpretative skills and independence of judgment in real cases. Evaluation is presented in scores out of 30 with a minimum score of 18 for passing, according to the following table:</p> <ul style="list-style-type: none"> <li>- sufficient/basic knowledge and ability to connect, apply and analyze covered topics (score 18-21)</li> <li>- fair/intermediate knowledge and ability to connect, apply and analyze covered topics (score 22-25)</li> <li>- good/high knowledge and ability to connect, apply and analyze covered topics (score 26-28)</li> <li>- excellent/advanced knowledge and ability to connect, apply and analyze covered topics (score 29-30L).</li> </ul>
<b>EDUCATIONAL OBJECTIVES</b>	The course provides students the fundamental knowledge of Ecology and Forest Ecology. More specifically it deals with the basic elements of the functioning of ecosystems, and thus the abiotic, biotic and mero-biotic, and understanding of the forest as a system of interacting components of different nature. Also they provide information about the complex processes such as biogeochemical cycles and climate change and the role played by forests in them.
<b>TEACHING METHODS</b>	Lectures in class, field visits
<b>SUGGESTED BIBLIOGRAPHY</b>	<p>Paci M., 2011 - Ecologia Forestale. Elementi di conoscenza dei sistemi forestali. Edagricole; Susmel L., 1988 – Principi di ecologia (collaborazione F. Viola) Cleup Editore Padova; Piussi P., 1994 - Selvicoltura Generale. UTET, Capp. I-XI; Pignatti S. (Ed.), 1995 - Ecologia Vegetale. UTET, Capp. 2, 3, 4 (forme biologiche), 5, 10, 15, 16, 17. Articoli di approfondimento forniti dal docente.</p>

## SYLLABUS

Hrs	Frontal teaching
3	Objectives of the course. An outline of the history of ecology. The ecology and other sciences. Autoecology and synecology
13	<p>The abiotic factors: solar radiation, the radiation balance of the Earth, the net radiation, albedo and the annual assolazione. The photosynthetically active radiation: photosynthesis in the plant level and population. Quantity and quality of light under a tree cover. The atmosphere, the overall atmospheric circulation, composition, temperature, thermal limits the distribution of plants, damage from thermal extremes: plant defense strategies; the forest action on air temperature. Temperature of the woods. The air humidity, traspiration. Environmental effects on stomatal conductance. The wind (physiologic and mechanical effects on vegetation). individual and collective stability stability. Crashes and uprooting. The ratio <math>h/d</math>. the wind on the forest action: profile of the wind speed in the woods. Water, water transport and hydraulic architecture of woody plants. The resistance of plants to dry: major adaptive strategies. Hydrological cycle in the forest: the water cycle and water balance. Rainfall: parameters and types of precipitation. Interception: the under foliage (throughfall) and stemflow (stemflow). I nod to the water balance of the woods. The climate. The climates of the Earth. The forest climate. The influence of the forest on climate. Action regimante the forest. Biomes.</p>
9	Merobiotici factors: Soil. soil components. Vegetation and soils. The symbiosis. The role of symbiosis.
4	Biotic and Demoecology: biological forms. Population characteristics, aggregation and dissemination. The estimated size and growth patterns of a population.

## SYLLABUS

Hrs	Frontal teaching
11	The forest ecosystem: synecology Forest Community. Phenology. Structure of forest communities. Species richness, dominance index, diversity indices. Ecotones. Ecological Succession: Examples of the Italian territory. Food chains and trophic structure of communities. Assessment of structural complexity and flora of the woods. horizontal structure of vegetation, layering, relative abundance. The forest as a functional system, energy flow and cycle of matter. Search the limiting factor and interactions of more ecological factors. homotypic and heterotypic reactions. Productivity and energy balance. The primary production in an ecosystem. ecosystem trophic structure: food chains and trophic levels and networks. transfers of energy in an ecosystem-based autotrophic. Ecological pyramids. Ecology of the forest fauna. The fire, the answers of the Mediterranean vegetation.
9	Cycles. Biogeochemical cycles. Nutrient circulation in the ecosystem. Air pollution and global change: the role of forests.
Hrs	Practice
15	Field visits in the woods: autoecology and synecology, vegetation distribution, processes of colonization.