UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Plant Biodiversity

2627-1-F0602Q105

Aims

This course will focus on the main woody plant taxa (mostly trees and shrubs) occurring in anthropogenic and natural environments which contribute enhancing the overall biological diversity of these ecosystems. By the end of the term, students will be able to:

1. Identify the main tree and shrub taxa occurring in Italy, including understanding on their functioning in relation to the environment and their distribution in relation to phytoclimatic and life vegetation zones.
2. Apply the learned concepts to other courses or toward work in the field of plant biology and environmental sciences.
3. Critically consider the implications of using different plant species for urban and natural forestry to meet current and future human needs.
4. Communicate their understanding of the presented topics using accurate scientific language and technical terminology.

Contents

Morphology, reproduction, chorology (spatial distribution), ecology, identification of the main tree and shrub species occurring in Italy in natural and anthropogenic environments.

Detailed program

I- Introduction
Plant architecture: trees and shrubs. Growth patterns in woody plant species. Branching models. Root system architecture. Seed germination strategies. Forest vegetation. Flora and vegetation concept. Phytoclimatic and life

vegetation zones. Chorology and plant distribution. Ecological traits of different vegetation zones in Italy (mediterranean, temperate and alpine).

II- Plant species
Morphology, ecology, chorology taxonomy and main uses of the following taxa:

Gymnosperm
Pinaceae: general description; genus Pinus: (P. cembra, P. mugo, P. uncinata, P. sylvestris, P. nigra, P. heldreichii); introduced pine species: (P. strobus, P. wallichiana); genus Picea (P. abies); genus Larix (L. decidua); genus Pseudotsuga (P. menziesii); genus Abies (A. alba); mediterranean firs (general description); genus Cedrus (C. atlantica, C. libani, C. deodara). Araucariaceae: hints. Cupressaceae: genus Cupressus (C. sempervirens, C. arizonica e C. macrocarpa); genus Juniperus; other Cupressaceae: genus Chamaecyparis, genus Thuja, genus Calocedrus(hints); subfamily Sequoioideae (hints) “Ex Taxodiaceae”: genus Sequoia, genus Metasequoia, genus Sequoiadendron. Taxodioideae: genus Taxodium, genus Cryptomeria. Taxaceae: Taxus baccata.

Angiosperm
Arecaceae: genus Chamaerops (hints). Magnoliaceae: genus Magnolia and Liriodendron. Altingiaceae: Lyquidambar styraciflua. Platanaceae: genus Platanus (P. occidentalis, P. orientalis, P. acerifolia). Juglandaceae: genus Juglans (J.regia, J. nigra). Fagaceae: genus Fagus (F. sylvatica); genus Castanea (C. sativa); genus Quercus: Sez. Quercus: (Q. robur. Q. petraea, Q. pubescens), Sez. Cerris: (Q. cerris, Q. suber). Sez. Ilex (Q. ilex): introduced oaks: Q. rubra. Betulaceae: Betuloideae: genus Betula (B. alba, B. pubescens); genus Alnus (A. glutinosa, A. cordata, A. incana, A. alnobetula); Coryloideae: genus Corylus (C. avellana), genus Carpinus (C. betulus), genus Ostrya (O. carpinifolia). Salicaceae: genus Salix (S. alba, S. capraea); genus Populus (P. alba, P. tremula, P. x canescens, P. nigra. P. deltoides e pioppi ibridi). Malvaceae: genus Tilia (T. cordata, T. platyphyllos, T. x vulgaris). Ulmaceae: genere Ulmus (U. minor, U. glabra); hints on U. laevis, U. procera, U. x hollandica. Hints on Zelkova. Cannabaceae: genus Celtis (C. australis). Rosaceae: Prunoideae: genus Prunus (P. avium). Maloideae: genus Sorbus (S. domestica, S. aucuparia, S. aria, S. torminalis). Crataegus hints. Fabaceae. Mimosoideae: hints on Acacia e Albizia. Cesalpinioideae: hints on Ceratonia, Gleditsia, Cercis. Faboideae: hints on Robinia, Sophora, Laburnum; Spartium, Cytisus. Sapindaceae: genus Acer (A. pseudoplatanus, A. opalus, A. monspessulanum, A. platanoides, A campestre, A. cappadocicum subsp. lobelii); genus Aesculus (A. hippocastanum). Simaroubaceae: Ailanthus altissima. Oleaceae: genere Fraxinus (F. excelsior, F. angustifolia, F. ornus). Myrtaceae: genus Eucalyptus (E. globulus, E. camaldulensis).

Prerequisites

Botany

Teaching form

Lecture (6 credits). Lectures will be held in Italian language in person (no streaming). Registrations will be made available for the students only for lectures held in the classroom.

17 lectures will be held in person;
2 lectures will be in person training activities;
2 lab activity will consist in field trips aimed at plant identification;

Textbook and teaching resource

Grossoni P., Bruschi P., Bussotti F., Selvi F.– Trattato di Botanica forestale. 1. Parte Generale e Gimnosperme. CEDAM Scienze Naturali Wolters Kluwer. Milano (2018).

Grossoni P., Bruschi P., Bussotti F., Pollastrini M., Selvi F., Trattato di Botanica forestale. 2. Angiosperme. CEDAM Scienze Naturali Wolters Kluwer. Milano (2020).

Reading material provided by the teacher (ppt slides in Italian)

Semester

Second semester

Assessment method

Students will be first asked by the instructor to identify plant species on real samples through anatomical characteristics of leaf, twig and branchlet using keys. Subsequently they will be assessed on their knowledge on morphology, ecology, chorology taxonomy and main uses of taxa described in the course. No intermediate evaluation is foreseen. The accurate use of scientific language to explain the topics and the ability to relate them will also be evaluated. Intermediate assessment will not be performed.

Office hours

By appointment

Sustainable Development Goals

CLIMATE ACTION