

Main course information	
Academic subject	Environmental Botany and Conservation I.C.
Degree course	Master's degree in Natural and Environmental Science
Degree class	LM/60 & LM/75
ECTS credits (CFU)	6
Compulsory attendance	Strongly recommended
Teaching language	Italian
Accademic Year	2019/2020

Professor/Lecturer	
Name & SURNAME	Luigi Forte
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Tutorial time/day	Thursday from 1:00 p.m. to 2:00 p.m. at the studio located on the first floor of the Botanical Garden Museum, University Campus

Course details	Pass-fail exam/Exam with mark out of 30	SSD code	Type of class
	Exam with mark out of 30	BIO/03	Lecture/workshop

Teaching schedule	Year	Semester
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Lesson type	CFU/ECTS	Lessons (hours)	CFU/ECTS lab	Lab hours	CFU/ECTS tutorial/workshop	Tutorial/workshop hours	CFU/ECTS field trip	Field trip Hours
	5,5	44	0	0	0	0	0,5	10

Time management	Total hours	Teaching hours	Self-study hours
	150	54	96

Academic Calendar	First lesson	Final lesson
	I October 2019	17 January 2020

Syllabus	
Course entry requirements	Basic knowledge of Ecology and Geobotany
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	
<i>Knowledge and understanding</i>	The student will have to know types and distribution models of the plant communities, the main synsystematic unities of Italian vegetation and the founding principles of biology of plant conservation. He/she will have to be able to understand the issues dealing with conservation and restoration of biological diversity. This knowledge, as well as the ability in comprehension, will be acquired through classroom lectures and field trips.
<i>Applying knowledge and understanding</i>	The student will have to develop the ability to identify the different plant communities (diagnosis at a level of superior synsystematic unities - Class, Order and Alliance) and to implement methods and instruments for the conservation of plant species and communities, with specific regard to the plant species of conservation interest and to the Habitats of the EC Habitats Directive (Council Directive 92/43/EEC), and particularly referring to the national and regional contexts. These abilities will be acquired through classroom teaching and by the examination of case studies of conservation programs or projects already carried out.
<i>Making informed judgements and choices</i>	The student will have to acquire the ability to choose the appropriate techniques for the conservation of plant species and communities, which have been presented during the classroom lectures. This ability will be acquired mostly by the use of case studies of

	conservation programs or projects already carried out.
<i>Communicating knowledge and understanding</i>	The student will have to acquire the lexicon and the discipline-specific terminology, which can give him/her the opportunity to work in teams involved in nature conservation, as well as the ability to comprehend possible in-depth analysis through specialized bibliography. This skill will be acquired through classroom lectures and during moments of interaction teacher-student which will be stimulated by the teacher.
<i>Capacities to continue learning</i>	The student will have to acquire the ability to read with critical sensibility the evolution of the discipline, by consulting texts and data bases. This ability will be acquired through the consultation of data bases and the webography that will be suggested by the teacher during the course.

## Syllabus

Course content	<p>Models of distribution of vegetation on the Earth, zones and belts of vegetation; fundamentals of Italian vegetation: Mediterranean Zone (thermo-mediterranean belt, meso-mediterranean belt, samnitic belt, subatlantic belt, irano-nevadian belt, oromediterranean belt); Medio-European Zone (illyric belt, medio-European belt, subatlantic belt, boreal belt, alpic belt).</p> <p>Synsystematics; Systematics of Italian vegetation: sandy and rocky coastal vegetation (<i>Cakiletea maritimae</i>, <i>Ammophiletea</i>, <i>Helianthemetea guttati</i> – <i>Malcolmietalia</i> -, <i>Crithmo-Limonietea</i>); vegetation of sea water or brackish water (<i>Posidonietea</i>, <i>Zosteretea marinae</i> and <i>Ruppieteae</i>); coastal halophytic and sub-halophytic vegetation (<i>Juncetea maritimi</i>, <i>Sarcocornietea fruticosae</i>, <i>Thero-Salicornietea</i>); thermophilous evergreen woods and Mediterranean scrub (<i>Quercetea ilicis</i> - <i>Quercetalia ilicis</i> and <i>Pistacio lentisci-Rhamnetalia alaterni</i>); nanophanerophytic and chamaephytic Mediterranean garrigues (<i>Cisto-Lavanduletea</i>, <i>Rosmarinetaea officinalis</i> and <i>Cisto-Micromerietea</i>); sub-mediterranean, sub-mesophytic and mesophytic deciduous woods (<i>Querco-Fagetea</i> - <i>Quercetalia roboris</i>, <i>Quercetalia pubescentis</i> and <i>Fagetalia sylvaticae</i>); deciduous scrubs (<i>Rhamno-Prunetea</i>, <i>Cytisetea scopario-striati</i>); therophytic thermoxerophytic grasslands (<i>Helianthemetea guttati</i> - <i>Tuberarietalia guttatae</i> and <i>Brachypodietalia distachyi</i>); thermoxerophytic perennial grasslands (<i>Lygeo-Stipetea</i> - <i>Lygeo-Stipetalia</i> and <i>Hyparrhenietalia hirtae</i>); subxerophytic and mesophytic perennial grasslands (<i>Festuco-Brometea</i> - <i>Scorzonero-Chrysopogonetalia</i> and <i>Brometalia erecti</i>); freshwater floating or rooted sub-submerged vegetation (<i>Charetea fragilis</i>, <i>Lemnetea</i> and <i>Potametea</i>); lake and marsh helophytes vegetation (<i>Phragmito-Magnocaricetea</i>); vegetation of temporary ponds (<i>Isoeto-Nanojuncetea</i>); riparian woods and scrubs (<i>Salici purpureae-Populetea nigrae</i> - <i>Populetalia albae</i> and <i>Salicetalia purpureae</i> – and <i>Nerio-Tamaricetea</i>); swamp woods (<i>Alnetea glutinosae</i>); oromediterranean and subalpine conifer woods and scrubs (<i>Pino-Juniperetea</i> and <i>Vaccinio-Piceetea</i>); oromediterranean and alpine grasslands (<i>Elyno myosuroidis-Seslerietea caeruleae</i> - <i>Seslerietalia caeruleae</i> and <i>Seslerietalia tenuifoliae</i> -, <i>Caricetea curvulae</i> and <i>Nardetea strictae</i>).</p> <p>Objectives of Biology of conservation. Biodiversity: hierarchical levels and measuring methods. Plant biodiversity loss and its causes. Conservation of plant biodiversity and identification of priorities, Red List, Global Strategy for Plant Conservation (GSPC) and European Plant Conservation Strategy (EPCS).</p> <p>In situ and ex situ conservation.</p> <p>Ex situ conservation: botanic gardens, field genebanks and germplasm banks. Biology and ecology of seed germination.</p> <p>In situ conservation: protected areas, species-specific or habitat-specific conservation programmes (translocations: reinforcements, reintroductions, conservative introductions), restoration ecology.</p> <p>Plant species and habitats of EC Habitats Directive (Council Directive 92/43/EEC) with particular regard to the national and local context.</p> <p>The contents of the field trips will deal about the subjects debated during the class lectures.</p>
Course books/Bibliography	<p>Ubaldi D., 2012. Guida allo studio della flora e della vegetazione. Clueb, Bologna.</p> <p>Pignatti S., 1995. Ecologia vegetale. UTET, Torino.</p> <p>Pignatti S., 1998. I boschi d'Italia. Sinecologia e biodiversità. UTET, Torino.</p> <p>Primack R.B., Carotenuto L., 2003. Conservazione della natura. Zanichelli, Bologna.</p> <p>Blasi C., Boitani L., La Posta S., Manes F., Marchetti M. (Eds.), 2005. Stato della</p>

	<p>Biodiversità in Italia. Contributo alla strategia nazionale per la biodiversità. Palombi Editori, Roma.</p> <p>Bacchetta G., Fenu G., Mattana E., Piotta B., Virevaire M. (Eds.), 2006. Manuale per la raccolta, conservazione e gestione ex situ del germoplasma. APAT, Roma.</p>
Notes	<p>The texts suggested, save those that can be freely accessed on the Internet, are available for reference at the Library of the Plant Biology Section of the Department of Biology. During the course, electronic documents as well as course slides will be provided, though they must not be considered as lecture notes.</p> <p>The use of class notes is strongly recommended.</p>
Teaching methods	<p>Classroom lectures supported by multimedia tools, and field trips aimed both at acquiring methods and techniques for ex situ conservation, and at a field identification of the main species that are structural of the most common plant communities; the identification of these species will be carried out by the teaching method of comparative analysis of diagnostic characters. Moments of interaction teacher-student stimulated by the teacher during the classroom lectures.</p>
Assessment methods (indicate at least the type written, oral, other)	<p>Oral exam is the main instrument for the assessment which, however, will be based upon the regularity in attending the course as well. For the final assessment, clarity in the presentation and a correct use of language will be considered too.</p>
Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement there are)	<p><b>Knowledge and understanding</b> The student will have to demonstrate to know all the contents of the teaching and particularly will have to prove that he/she has acquired the basics about the different plant communities and the methods and techniques for the conservation of plant. He/she will have to prove to have fully understood the issues regarding conservation and restoration of biodiversity. The knowledge of these topics is necessary to pass the exam, while the mere acquisition of basics notions allows an assessment which will not exceed a middle level.</p> <p><b>Applying knowledge and understanding</b> The student will have to be able to use the criteria of diagnosis of synsystematic unities, based upon the relationships between the different ecological factors and the composition and distribution of plant communities, as well as to diagnose the various requirements for conservation and the most appropriate strategies and techniques for the conservation of plant species and communities. These skills are essentials to pass the exam.</p> <p><b>Making informed judgements and choices</b> The student will have to demonstrate the ability to choose the most appropriate techniques for the conservation of plant species and communities, based on biological and ecological features as well as on those features which are related to the vulnerability status. This skill allows to get a very positive assessment.</p> <p><b>Communicating knowledge and understanding</b> The abilities to express concepts and formulate interpretations, with a correct use of language and clarity in exposition, making use of the scientific terminology learnt during the semester, will be greatly appreciated. These skills, together with the previous one, ensure a very positive assessment of the competence and performance of the student.</p> <p><b>Capacities to continue learning</b> During the final examination, the student must show to have acquired critical abilities and that he/she is able to achieve new knowledge on his/her own. Possessing these abilities will contribute to a strongly positive assessment of the final exam.</p>
Further information	