General information	
Academic subject	***Environmental Botany and Conservation*** ***Environmental Botany and Conservation I.C. – 8 CFU***
Degree course	*Master's degree in Natural and Environmental Science*
Academic Year	*I*
European Credit Transfer and Accumulation System (ECTS)	6
Language	*Italian*
Academic calendar (starting and ending date)	*I semester (October 2021- January 2022)*
Attendance	*Strongly recommended*

Professor/ Lecturer	
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Virtual headquarters	*Microsoft Teams code: nos4gdy*
Tutoring (time and day)	Thursday, ore 13:00-14:00

Syllabus	
Learning Objectives	*To provide professionalizing expertise about phytocoenotic diversity and the management and conservation of plant biodiversity.*
Course prerequisites	*Basic knowledge of Ecology and Geobotany*
Contents	*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, oro-mediterranean belt); Medioeuropean Zone (illyric belt, medioeuropean belt, subatlantic belt, boreal belt, alpic belt).* *Synsystematics; Systematics of Italian vegetation: sandy and rocky coastal vegetation (Cakiletea maritimae, Ammophiletea, Helianthemetea guttati – Malcolmietalia -, Crithmo-Limonietea); vegetation of sea water or brackish water (Posidonietea, Zosteretea marinae and Ruppietea); coastal halophytic and sub-halophytic vegetation (Juncetea maritimi, Sarcocornietea fruticosae, Thero-Salicornietea); thermophilous evergreen woods and Mediterranean scrub (Quercetea ilicis - Quercetalia ilicis and Pistacio lentisci-Rhamnetalia alaterni); nanophanerophytic and chamaephytic Mediterranean garrigues (Cisto-Lavanduletea, Rosmarinetea officinalis and Cisto-Micromerietea); sub-mediterranean, sub-mesophytic and mesophytic deciduous woods (Querco-Fagetea - Quercetalia roboris, Quercetalia pubescentis and Fagetalia sylvaticae); deciduous scrubs (Rhamno-Prunetea, Cytisetea scopario-striati); therophytic thermoxerophytic grasslands (Helianthemetea guttati - Tuberarietalia guttatae and Brachypodietalia distachyi); thermoxerophytic perennial grasslands (Lygeo-Stipetea - Lygeo-Stipetalia and Hyparrhenietalia hirtae); subxerophytic and mesophytic perennial grasslands (Festuco-Brometea - Scorzonero-Chrysopogonetalia and Brometalia erecti); freshwater floating or rooted sub-submerged vegetation (Charetea fragilis, Lemnetea and Potametea); lake and marsh helophytes vegetation (Phragmito-Magnocaricetea); vegetation of temporary ponds (Isoeto-Nanojuncetea); riparian woods and scrubs (Salici purpureae-Populetea nigrae - Populetalia albae and Salicetalia purpureae – and Nerio-Tamaricetea); swamp woods (Alnetea glutinosae); oromediterranean and*

	subalpine conifer woods and scrubs (Pino-Juniperetea and Vaccinio-Piceetea); oromediterranean and alpine grasslands (Elyno myosuroidis-Seslerietea caeruleae - Seslerietalia caeruleae and Seslerietalia tenuifoliae -, Caricetea curvulae and Nardetea strictae). *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).* *In situ and ex situ conservation.* *Ex situ conservation: botanic gardens, field genebanks and germplasm banks. Biology and ecology of seed germination.* *In situ conservation: protected areas, species-specific or habitat-specific conservation programmes (translocations: reinforcements, reintroductions, conservative introductions), restoration ecology.* *Plant species and habitats of EC Habitats Directive (Council Directive 92/43/EEC) with particular regard to the national and local context.* *The contents of the field trips will deal about the subjects debated during the class lectures.*
Books and bibliography	*Ubaldi D., 2012. Guida allo studio della flora e della vegetazione. Clueb, Bologna.* *Pignatti S., 1995. Ecologia vegetale. UTET, Torino.* *Pignatti S., 1998. I boschi d'Italia. Sinecologia e biodiversità. UTET, Torino.* *Primack R.B., Carotenuto L., 2003. Conservazione della natura. Zanichelli, Bologna.* *Blasi C., Boitani L., La Posta S., Manes F., Marchetti M. (Eds.), 2005. Stato della Biodiversità in Italia. Contributo alla strategia nazionale per la biodiversità. Palombi Editori, Roma.* *Bacchetta G., Fenu G., Mattana E., Piotto B., Virevaire M. (Eds.), 2006. Manuale per la raccolta,conservazione e gestione ex situ del germoplasma. APAT, Roma.*
Additional materials	*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.* *The use of class notes is strongly recommended.*

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
150	*44*	*10*	*96*
ECTS			
6	*5,5*	*0,5*	
Teaching strategy			
	Classroom lectures supported by multimedia tools, and field trips aimed both at acquiring methods and tecniques 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. The course is not supplied in e-learning mode		

Expected learning outcomes	
Knowledge and understanding on:	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.
Applying knowledge and understanding on:	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.
Soft skills	• *Making informed judgments and choices* 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. • *Communicating knowledge and understanding* 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. • *Capacities to continue learning* 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.

Assessment and feedback	
Methods of assessment	*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.*
Evaluation criteria	• *Knowledge and under standing:* 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. • *Applying knowledge and understanding:*

	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. • *Autonomy of judgment*: 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. • *Communicating knowledge and understanding:* 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. • *Capacities to continue learning:* 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.
Criteria for assessment and attribution of the final mark	*The final assessment is given in thirtieths. The exam is passed when the final mark is higher than or equal to 18. For the final assessment, regular attendance at the corse will be considered too, as well as clarity in the presentation and a correct use of language.*
Additional information	