



# UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze della Terra e del Mare		
ACADEMIC YEAR	2023/2024		
MASTER'S DEGREE (MSC)	NATURAL SCIENCES		
INTEGRATED COURSE	BIOGEOGRAPHY - INTEGRATED COURSE		
CODE	20538		
MODULES	Yes		
NUMBER OF MODULES	2		
SCIENTIFIC SECTOR(S)	BIO/03, BIO/05		
HEAD PROFESSOR(S)	ILARDI VINCENZO	Professore Associato	Univ. di PALERMO
OTHER PROFESSOR(S)	MARRONE FEDERICO	Professore Ordinario	Univ. di PALERMO
	ILARDI VINCENZO	Professore Associato	Univ. di PALERMO
CREDITS	9		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	1		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	<p><b>ILARDI VINCENZO</b></p> <p>Monday 09:30 13:30 Studio del docente, previo appuntamento telefonico.</p> <p>Tuesday 09:30 13:30 Studio del docente, previo appuntamento telefonico.</p> <p>Wednesday 09:30 13:30 Studio del docente, previo appuntamento telefonico.</p> <p>Thursday 09:30 13:30 Studio del docente, previo appuntamento telefonico.</p> <p>Friday 09:30 13:30 Studio del docente, previo appuntamento telefonico.</p> <p><b>MARRONE FEDERICO</b></p> <p>Monday 10:00 11:00 Via Archirafi 18, primo piano, stanza I8</p> <p>Tuesday 15:00 17:00 Sede del Consorzio Universitario, corso Vittorio Emanuele, 92, 93100 Caltanissetta</p> <p>Wednesday 10:00 11:00 Via Archirafi 18, primo piano, stanza I8</p> <p>Friday 10:00 11:00 Via Archirafi 18, primo piano, stanza I8</p>		

<b>PREREQUISITES</b>	Basic knowledge of general and systematic botany and zoology
<b>LEARNING OUTCOMES</b>	<p>Knowledge and understanding ability</p> <p>Acquisition of techniques and cognitive tools needed for reading, sampling, analysis and evaluation of the biological component (animal and vegetatal) of the Palearctic Region with particular reference to the Mediterranean area.</p> <p>Acquisition of knowledge for understanding adaptations of plants and animals to different environments.</p> <p>Ability to apply knowledge and understanding</p> <p>Ability to analyze, describe and elaborate technical documents, including maps, functional to activities of study.</p> <p>Ability to analyze, diagnose and evaluate the macroscopic biological component of ecosystems.</p> <p>Ability to analyse, diagnose and evaluate diagnosis and evaluation of the macroscopic biological component of ecosystems.</p> <p>Ability to understand, interpret and summarize geological, geomorphological, soil and climate data, etc. connected to the ecological needs of the biological component, with particular reference to Mediterranean area species .</p> <p>Making judgements</p> <p>The course provides data, methods and expertise in the field of biogeography, functional to the evaluation and choice, in full autonomy, of the most appropriate techniques and methods to be used whenever they are requested.</p> <p>Ability to join inter- and transdisciplinary study and working groups.</p> <p>Communication skills</p> <p>Acquisition of disciplinary specialized terminology necessary for the interpretation and the correct presentation of the results of the surveys in the field of the Mediterranean area biogeography.</p> <p>Learning ability</p> <p>Learning of the research techniques of specific bibliographic materials of geobotanical disciplines. Aptitude for integration and interaction in professional field within workgroups thanks to the acquired knowledge. Possibility of participation in seminars, congresses, specialization courses or masters in the field of the biogeography.</p>
<b>ASSESSMENT METHODS</b>	<p>Oral exam on the topics covered in the classroom or verified during excursions. The final exam score will be done in thirtieth.</p> <p>Excellent (30-30 cum laude). Excellent knowledge of the topics, excellent language skills, good analytical skills, the student is able to apply the knowledge to solve the proposed problems.</p> <p>Very good (26-29). Good mastery of the topics, full property of language. The student is able to apply his/her knowledge to solve proposed problems. Good (24-25). The student reached a basic knowledge of the main topics, discrete properties of language, with limited ability to independently apply the his/her knowledge to the solution of the proposed problems.</p> <p>Satisfactory (21-23). The student does not have full mastery of the main topics of teaching, but it possesses the knowledge, satisfactory property language, poor ability to independently apply the acquired knowledge.</p> <p>Sufficient (18-20). The student has a minimum basic knowledge of the main topics and technical language issues, very little or no ability to independently apply the acquired knowledge.</p> <p>Insufficient - The student does not have an acceptable knowledge of the contents of the topics covered in the course.</p>
<b>TEACHING METHODS</b>	Frontal lessons integrated with excursions (1 C.F.) projection of original images, and the support of papers.

**MODULE  
ZOOGEOGRAPHY**

*Prof. FEDERICO MARRONE*

**SUGGESTED BIBLIOGRAPHY**

- Biogeografia – Zunino & Zullini – Casa Editrice Ambrosiana - ISBN: 9788808087072
- Biogeography, fourth edition– Lomolino et al. – Sinauer Press - ISBN: 978-0-87893-494-2

<b>AMBIT</b>	20987-Attività formative affini o integrative
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<b>INDIVIDUAL STUDY (Hrs)</b>	51
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<b>COURSE ACTIVITY (Hrs)</b>	24
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**EDUCATIONAL OBJECTIVES OF THE MODULE**

The main educational objective of the class is to provide to the students the necessary theoretical and practical knowledge to investigate and interpret the diversity patterns of modern biota, based both on historical and ecological perspectives. Moreover, the Class will provide a basic knowledge of the Sicilian and Italian biotas in the frame of the West-Palearctic fauna, with a special focus on the "good practices" aimed at the studying species and ecosystems.

**SYLLABUS**

Hrs	Frontal teaching
2	Introduction to the discipline
4	The geographica ranges of the taxa: definition, assessment, mapping
4	Systematic zoogeography
4	Vicariance and dispersal processes
4	Phylogeography
4	The fauna of Sicily
2	Conclusive review and class papers discussion

## MODULE GEOBOTANY

*Prof. VINCENZO ILARDI*

### SUGGESTED BIBLIOGRAPHY

Ubaldi D., 2003 – Flora, Fitocenosi e Ambiente. Elementi di Geobotanica e Fitosociologia. CLUEB  
Lomolino M.V., Riddle B.R., Whittaker R.J. – 2016. Biogeography. Biological Diversity across Space and Time. Fifth Edition. Sinauer Associates, Inc.

<b>AMBIT</b>	50511-Discipline ecologiche
<b>INDIVIDUAL STUDY (Hrs)</b>	98
<b>COURSE ACTIVITY (Hrs)</b>	52

### EDUCATIONAL OBJECTIVES OF THE MODULE

The course aims to train students able to analyse the plant topsoil from the point of view both of flora and vegetation within the Mediterranean Region. The primary objective is the acquisition of techniques of sampling, processing and interpretation of data related to the floristic and phytocoenotic component, analyzed from a biogeographic point of view. The course aims also to provide the necessary tools to analyse the plant landscapes at any scale required (species, plant communities, vegetation series, landscape) and to represent them cartographically. Moreover, it aims to provide the cognitive tools necessary in the assessment of human impacts on biodiversity and in its planning and management.

## SYLLABUS

Hrs	Frontal teaching
2	Generalities and definitions in Geobotany. Historical notes and relationships to other other Sciences.
2	Phylogeny and phytogeography. Speciation and radiation. The ontogenetic cycle and the strategies of dispersion. Intraspecific and interspecific competition.
2	Concepts of palaeobotany. Evolution of the plants and Plate Tectonics. From the colonization of the land to the appearance of phanerophytes. Genesis of the Mediterranean sea. From the Cretaceous to the Messinian salinity crisis.
2	Origin and evolution of the Mediterranean flora, with particular reference to the flora of Italy and Sicily.
2	Glaciations of the Quaternary, refuge areas, and evolutionary and speciation processes connected (hybridization, polyploidy, apomixis).
2	Ecological factors (climatic, edaphic, topographic and biotic) and adaptations. The bioclimates in the Mediterranean. Region,
4	Climate-vegetation relationship. Biomes (tropical forests, savannas, deserts, grasslands, temperate deciduous forests, biomes of Mediterranean climate regions, coniferous forests, tundra)
2	Centers of origin and distribution of the species. Geographic ranges of the species. Methods of construction and representation of geographic ranges. Change (regressions and expansions) in the geographic ranges.
2	Definition of the concept of flora. Method of flora census according to a geographic grid. Chorological types and chorological spectrum. Biological forms and biological spectrum.
2	Floristic kingdoms regions provinces and districts.
4	The endemic component of the Mediterranean flora.
2	The Mediterranean (Steno-Mediterranean, Euri-Mediterranean and Mediterranean montane), Euro-Siberian, European, North African and Middle Eastern (Asian) components of the flora of the Mediterranean Region
2	The flora of environments disturbed by man. Widely distributed species. The invasive synanthropic florula.
4	The plant communities of the Mediterranean coastal environment and conservation issues. The communities of rivers, lakes and wetlands in general.
4	Relationships between human activities and natural environment. Analysis of the vegetation expressions of greater phytogeographical interest in the Mediterranean. Woodlands, shrubs and grasslands of the Mediterranean Region.
2	The contribution of geobotany in the planning and management of the natural resources.
Hrs	Practice
12	Educational excursions