COASTAL AND MARINE BIOLOGY AND ECOLOGY (LM51)

(Lecce - Università degli Studi)

Teaching COMMUNITY ECOLOGY

GenCod A002217

Owner professor GIORGIO MANCINELLI

Teaching in italian COMMUNITY ECOLOGY

Teaching COMMUNITY ECOLOGY

SSD code BIO/07

Reference course COASTAL AND MARINE BIOLOGY AND ECOLOGY

Course type Laurea Magistrale

Credits 6.0

Teaching hours Front activity hours: 54.0

For enrolled in 2022/2023

Taught in 2022/2023

Course year 1

Language ENGLISH

Curriculum PERCORSO COMUNE

Location Lecce

Semester First Semester

Exam type Oral

Assessment Final grade

Course timetable https://easyroom.unisalento.it/Orario

BRIEF COURSE DESCRIPTION

The course moves from a preliminary yet detailed presention of founding theories in community ecology casted within the general historical evolution of the ecological discipline, from Charles Elton to the present day. Subsequently, specific conceptual and methodological issues are addressed, specifically: i) macroecology and community organization: emphasis is placed on island biogeographic theory by Wilson and MacArthur, in order to introduce statistical approaches based on null models for testing the role of competitive interactions in community assembly; ii) relations between biodiversity and ecosystem functioning: the classical rivets, redundancy, and idiosyncratic models are examined in detail and compared with the results of published experiments conducted both in the field and in the laboratory; reference is made to the theories of MacArthur and May on the relationship between the complexity of natural communities and their stability; iii) top-down and bottom-up controls: after a summary of the Eltonian pyramids concept, the Hairston, Smith and Slobodkin theory of trophic cascades is addressed in detail, discussing aquatic as well terrestrial examples; iv) food webs: the most recent developments related to the topic are presented, such as augmented networks, high complexity networks, and bipartite networks; the use of carbon and nitrogen stable isotopes for the analysis of marine food webs is presented. Laboratory activities focus on formalization and data analysis exercises using specific statistical methods and the free software package R. If possible, field excursions to the Porto Cesareo Marine Protected area are performed, in order to collect quantitative information on the biodiversity of the community characterizing the area, to be used for building a trophic network

REQUIREMENTS

Knowledge of basic ecological concepts provided in undergraduate ecology courses

COURSE AIMS

The objectives of the course are to present students in a clear and contextualized way with the most updated and debated conceptual topics in community ecology and at the same time provide the methodological and statistical tools necessary to analyze the structure and dynamics of natural communities

TEACHING METHODOLOGY	1) Lectures; 2) discussion of seminal papers in community ecology (student talks); 3) supervised practical activities performed in the computer lab using previously prepared material made available on-line; 4) field excursions and group activities (working groups) (if possible)
ASSESSMENT TYPE	Final exam consisting in 1) written review of a scientific article chosen by the student among those discussed during the course; 2) written multiple choice test
REFERENCE TEXT BOOKS	Slides and training materials made available online in pdf format taken from the following reference texts: Morin – Community Ecology Gotelli – Null Models in Ecology Polis & Winemiller – Food Webs Bolker – Ecological Models and Data in R