



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Network analysis for ecologists

2223-128R-05

Title

Network analysis for ecologists

Teacher(s)

Giovanni Strona

Language

English

Short description

Networks offer a convenient way to represent and investigate countless real world systems where entities of some kind (i.e. network nodes) are connected by a static relationship or a dynamic process (i.e. network links). As it is becoming clearer that the dense – yet often elusive - networks of ecological interactions and dependencies permeating complex natural systems play fundamental roles in the emergence and maintenance of biodiversity, there is no surprise in the increasing popularity of network analysis as a tool to investigate fundamental issues in ecology and biological conservation. Much attention has been directed towards the investigation of networks depicting mutualistic and antagonistic interactions. In particular, several studies have tried to understand how - and to what extent – specific, non random structural patterns observed in real world networks contribute to the

robustness (or determine the fragility) of natural systems. Notably, most of the knowledge and tools permitting to tackle those (and additional questions) have been developed in scientific contexts other than ecology, and particularly in the fields of physics and mathematics. This course aims at introducing participant PhD students to ecological network analysis, providing participants with basic – yet formally accurate - knowledge of fundamental network science concepts, as well as with practical tools and guidelines to apply those concepts to the investigation of specific natural systems. Theoretical lessons will be paired with practical exercises and coding training sessions (in R). At the end of the course, students will be able to design and conduct independently basic network analyses to tackle specific ecological questions relevant to their own research lines.

CFU / Hours

2 CFU/16 hours

Teaching period

June 2023

Sustainable Development Goals

CLIMATE ACTION
