UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Stress Ecology

2324-1-F0601Q105

Aims

The course provides the basics of "stress ecology" and environmental risk analysis for chemicals.
Particularly, the course aims to provide the student with the following skills:

Knowledge and understanding
Know and understand the role of disturbance and stress phenomena in ecosystems (both from natural and anthropogenic origins) through the presentation of
theories and case studies on these topics

Applying knowledge and understanding
Know and understand the methodologies to be followed in the environmental risk assessment (ERA) strategies for chemical substances.

Making judgements
Through the acquisition of the ERA concepts, the student will increase his or her autonomy of judgment and choice for risk mitigation strategies

Communication skills
During the lectures, the student will be invited to be active part by discussing, with the lecturer and other students, the topics covered in class. This will improve his communication skills in
public

Learning skills
The course will improve the student's learning skills in the interpretation of disturbance and stress phenomena of natural or anthropic origin

Contents

Stress Ecology and Environmental Risk Assessment of Chemicals

Detailed program

1. Reminds of Ecology (feedback mechanisms, homeostasis, homeoresis, limiting factors, niche concept)
2. Difference between disturbance and stress in ecology
3. The concept of stress in relation to the different levels of bio-ecological hierarchical organization
4. Anthropic stress from chemical substances
5. The concept of risk assessment, risk management and allowable loads in the territory.
6. Campaign studies: bioindicators, biomarkers.
7. Mixtures of toxic substances in the environment: an approach to the problem.
8. The quality criteria for toxic substances and the calculation of PNEC (Predicted No Effect Concentration) according to European legislation.
9. Bioconcentration, Bioaccumulation, Biomagnification.
10. Main classes of synthetic organic pollutants and evidence of their environmental effects

Prerequisites

Knowledge of Ecology and Chemistry is required

Teaching form

Front lecturing

Textbook and teaching resource

Battisti, Poeta, Fanelli, An introduction to disturbance ecology,
Springer; Newman MC and Unger MA, Fundamentals of ecotoxicology,
Lewis Publishers; slides (availables on e-learning)

Semester

First semester

Assessment method

Knowledge and understanding.

At the end of the course the student should know: Methods of hazard and risk assessment of one or more stressors to which an organism is subjected.
Ability to apply knowledge and understanding.
The student should be able to apply the knowledge acquired in the frontal part of the teaching by demonstrating the ability to carry out the calculation of stress induced by chemical and physical stressors.
Autonomy of judgement.
The student should be able to evaluate the effects induced by one or more stressors on organisms, populations and communities.
Communicative skills.
At the end of the course, the student will be able to appropriately describe the issues studied using the correct specific vocabulary.
Learning skills.
By the end of the course, the student will be able to consult the literature on the topics covered and the relevant legislation. He/she will also be able to independently design an ecological/ecotoxicological risk analysis.

Grade expressed in thirtieths 18-30/30

Office hours

Appointment by email to sara.villa@unimib.it to set up a date for the meeting.

Sustainable Development Goals

ZERO HUNGER | LIFE ON LAND