



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Stress Ecology

2122-1-F0601Q091

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#### 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, homeoeresis, 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 (available on e-learning)

### **Semester**

First semester

### **Assessment method**

The oral exam (duration about 20 min) will evaluate the student's knowledge about the principles of stress ecology and environmental risk assessment of chemicals

## **Office hours**

Appointment by email to set up a date for the meeting.

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