Advanced Ecotoxicology

Synopsis
The human society faces global environmental challenges, such as human population in accelerated growth, pollution, climate changes. Human resources with advanced training in Ecotoxicology are needed to address and overcome such challenges contributing to societal development and sustainability of life on earth.

Aims
To get knowledge and practical training in Ecotoxicology.

Objectives
At the end of the Unit, you should have:
1. Advanced and applied ecotoxicological concepts, and training on methods and techniques commonly used in ecotoxicity assessments, as well as in new approaches necessary to address and overcome major environmental problems (e.g. pollution and other problems resulting from human population growth, climate changes).
2. Increased interest for scientific research and skills to continuously update your knowledge and training and to apply them in problem solving in the scope of ecotoxicology in different regions (temperate, tropical and subtropical, cold).
3. The capability of working in a team, in an integrated and multidisciplinary way in the scope of Ecotoxicology.
4. Developed autonomy and skills to promote consensual choices, analyse and discuss results, make decisions and communicate results, risks and decisions to different types of audience in distinct contexts in the scope of ecotoxicology.

Syllabus
Topics covered include:
- Ecotoxicology; environment and societal development; sustainability.
- Classic problems and Emerging paradigms.
- Toxicity of environmental contaminants.
- Mixtures and toxicological interactions.
- Assessment of the ecotoxicity of individual agents and mixtures in terrestrial, freshwater and marine ecosystems: laboratory assays; micro-, meso- and macro-cosmos assessments; monitoring and other methods to assess the environmental quality and the effects of environmental contaminants in real scenarios.
- Interactions between physical (e.g. temperature) and chemical stressors; effects of multi-stressors.
- Climate changes, biotoxins and pollution.
- New challenges and opportunities.

Learning & Teaching
- Lectures: 18 hr
- Practical and laboratory work: 24 hr
- Seminary: group autonomous work with oral presentation

Teaching Staff
L. Guilhermino (Coord.)
Semester: 2
Timetable slot: To be advised
ECTS: 6
Level: Compulsory

Bibliography

- Araújo, C.M.V.; Shinn, C. (Eds.). 2017. *Ecotoxicology in Latin America*. Nova Publishers, New York, 591 p. ISBN: 978-1-53610-609-1.
- Duarte, B.; Caçador,M.I. 2019. *Ecotoxicology of Marine Organisms*. CRC Press.
- Kim, Y.J.; Platt, U. (Eds.). 2008. *Advanced Environmental Monitoring*. Springer, Dordrecht.
- Van Gestel, C.A.M.; Jonker, M.J.; Kammenga, J.E.; Laskowski, R.; Svendsen, C. 2010. *Mixture Toxicity – Linking Approaches from Ecological and Human Toxicology*. SETAC & CRC Press, Taylor & Francis Group, Boca Raton.
* Vethaak, D.; Schrap, M.; de Voogt, P. 2006 (Eds.). *Estrogens and Xenoestrogens in the Aquatic Environment: an Integrated Approach for Field Monitoring and Effect Assessment*. Society of Toxicology and Environmental Chemistry (SETAC) Press, Pensacola.
- Walker, C.H.; Hopkin, S.P.; Sibly, R.M.; Peakall, D.B. (Eds.) 2006. *Principles of Ecotoxicology*. 3rd ed., CRC Taylor & Francis, London.
- Recent articles and several websites

Assessment
- Written examination (50%)
- Continuous evaluation (10%)
- Seminary and oral presentation (40%)

Course Evaluation
By completion of University Unit Evaluation Questionnaire by students, annual assessment