

**INTRODUCTION TO ECOLOGICAL THEORY, APPLICATION AND VALUES
(MASTED-02-07)**

DEGREE PROGRAM:		Master in integrated STEAM Education (MASTED)		
SEMESTER:	TYPE:	CREDITS:	WORKLOAD:	MENTORING:
Second	Basic	6 ECTS	150 hours	2 hours/week
LANGUAGE: Portuguese				

OBJECTIVES

General	To provide to the students an introductory view on ecological theories, their application to solve real-world problems in the socioenvironmental domain, and the values intervening in environmental decision-making.
Specific	<ul style="list-style-type: none"> • To provide an understanding of the nature of scientific knowledge and its relations with other knowledge systems • To address the role of theories and models in science, and how they are used in environmental management and decision making. • To discuss the prospects and limits of models applied in environmental management and decision making, and ideas related to the precautionary principle and adaptive management. • To approach epistemic and non-epistemic values intervening in ecological and conservation science, and in environmental management and conservation. • To discuss the causes and possible solutions of the research-practice/implementation gap in ecology and conservation. • To address the history of ecology and a panoramic view of different research traditions and theories in ecological research. • To provide an overview of levels of organization and scales involved in biological and ecological systems, and how they relate to environmental management and decision making. • To explain time and space scales in ecological processes, and how they relate to the dynamics of ecological systems. • To instrumentalize the students to understand dynamical and hierarchical models in ecology, and how they are used research and environmental management and decision making.

SUBJECT MATTER

History and philosophy of science applied to ecology and conservation. History and philosophy of ecology. Ecological theories. Values in ecology and conservation. Ecological modelling. Ecology as an interdisciplinary field.

COMPETENCES

- C1: Developing knowledge and understanding in ecology and conservation from a philosophically-informed perspective, in connection with their application in environmental management and decision making, as well as understanding STS relationships and values intervening in ecology, conservation, and environmental management and decision making.
- C8: Professional development and self-reflection.
- C9: Integrating the theoretical knowledge
- C12: Developing critical literacy competence.
- C14: Developing advanced digital competences.
- C15: Developing digital pedagogy competences to use, plan and implement new technologies.
- C16: Developing of professional commitment using digital technologies.
- C17: Embracing complexity in sustainability.
- C18: Acting for sustainability.
- C19: Developing competences for intercultural communication.

LEARNING OUTCOMES

Knowledge	<ul style="list-style-type: none"> • Knowledge of key theories and concepts in ecology and conservation. • Knowledge of the history of ecology and ecological research traditions and theories. • Knowledge of fundamental issues in ecological mathematical modelling, especially in relation to hierarchical and dynamical modelling. • Knowledge of key concepts in philosophy of science and apply them to ecology and conservation.
Skills	<ul style="list-style-type: none"> • Development of the capacity to analyse key theories and concepts in ecology and conservation from a philosophically- and ethically-informed perspective. • Development of the capacity to analyse the uses of ecological and conservation knowledge in environmental management and decision making, considering STS relationships and the role of values. • Development of the capacity to think interdisciplinarity in ecology and conservation, relating knowledge in these fields to history and philosophy of science, to STS studies, and to ethics.
Attitudes/values	<ul style="list-style-type: none"> • Development of a critical disposition towards key theories and concepts in ecology and conservation and their use in environmental management and decision making. • Development of a critical disposition towards the values and STS relations intervening in the relations between ecological and conservation knowledge and environmental management and decision making. • Acquisition of the sensitivity necessary to perceive the intersection between scientific, historical and philosophical knowledge in the fields of ecology and conservation.
TEACHING METHODS	
Lectures, Students' seminars, Problem-based learning, World café.	
EVALUATION	
Students' seminars, Problem-solving reports, Reflections on discussions in world cafés, Participation (including self-evaluation).	
PRECONDITIONS	
Basic biological knowledge.	
DEPARTMENT	Graduate Studies Programme in Ecology, Institute of Biology, Federal University of Bahia
LECTURERS	Charbel N. El-Hani Cláudio R. M. Reis
LITERATURE	<ul style="list-style-type: none"> • Acot, P. 1988. História da Ecologia. Ed. Campus. • Allen, T. F. H. & Hoekstra, T. W. 2015. Toward a Unified Ecology. Columbia University Press. • Barker, G. & Kitcher, P. 2013. Philosophy of Science: A New Introduction. Oxford: Oxford University Press. • Keller, D. & Golley, F. (Eds.). 2000. The Philosophy of Ecology: From Science to Synthesis. University of Georgia Press. • Kingsland, S. E. 1995. Modeling Nature. University of Chicago Press. • McIntosh, R. P. 1986. The Background of Ecology: Concept and Theory. Cambridge University Press. Pickett. S. T. A., • Kolasa, J. & Jones, C. G. 2007. Ecological Understanding (2a Ed.). Academic Press. Real, L. & Brown, J. H. (Eds.). 1991. • Foundations of Ecology: Classic Papers with Commentaries. University of Chicago Press. • Worster, D. 1994. Nature's Economy: A History of Ecological Ideas. Cambridge University Press.