Table S2.6.4. Form for the preparation of the course information sheets

Name of the subject
Ecology and environment

Code of the subject	Status of the subject	Semester	Number of ECTS credits	Class load
	Optional	Autumn, Winter	10	**5**

Study programme for which it is organized PhD Program "Natural sciences and Technology for Sustainable Development", Module Environment protection 3rd degree

Dependency by other subjects No prerequisites

Objectives of studying this subject
Introducing students to the scientific principles of ecology as a science and the application of principles of ecology in environmental protection

Contents of the subject (teaching units, forms of students' individual work, forms of testing) presented per working weeks in the academic calendar:

Preparatory week	
I week	Introduction. Ecology and environment. Diversity within the environment. Environmental conditions (Temperature, relative humidity, salinity, water flow). Ecological niche. Resources.
II week	Nutritional resources and users. Space as a resource. Life cycles of organisms. Population. Tables of life.
III week	Survival curves, Reproduction rates, population growth rate. Life cycle diversity. Reproductive success and the cost of reproduction. Life strategies.
IV week	Migrations and dispersions of organisms. Types of spatial arrangement of organisms. Demographic significance of dispersion. Dormancy.
V week	Competition within species. Competition and population size regulation. Territoriality. Mathematical models of intraspecific competition. Logistic equation. Competition between species. Gaussian principle of competitive exclusion. Mutual antagonism. Lotka-Voltaire model. Coexistence of a stronger and more famous competitor.
VI week	Predation. Division of predators. Predator feeding spectrum width and food composition. Functional responses.
VII week	Influence of consumer population density. Group distribution and influence on population dynamics.
VIII week	Symbiosis. Mutualism Amensalism, Commensalism. Parasites. Host-parasite interactions. Detritophases.
IX week	Population density. Population density regulation. Analysis of key factors. Population cycles.
X week	Logarithmic normal distribution of population densities in communities. Extinction of species.
XI week	The nature of communities. Describing communities. Ecosystem: definition and diversity Environmental disturbance. Biomi. Community successions. Island biogeography. Island communities and evolution.
XII week	Flow of energy and matter in communities. Primary production of ecosystems on Earth. Factors limiting primary production. Energy circulation in communities. Trophic structure of communities. Food chains.
XIII week	Biodiversity. Species diversity. Alpha, beta and gamma diversity. Biodiversity hot and cold spots.Ecoregions. Genetic diversity. Endemics and relics.
XIV week	Climate change and populations. Ecological applications at the level of organisms and individual populations: Restoration and conservation. Ecological applications at the level of population interactions. Control of harmful species. Invasive species.
XV week	Environmental applications at the community and ecosystem level. Management based on the theory of succession, food chains, ecosystem functioning and bidiversity. Designing protected areas

Methods of education

- lectures
- experimental and laboratory work
- consultations

Students' load

Weekly	In Semester
3 hours lectures 2 hour tutorial 8 hours and 20min individual work including consultations Total: 13 hours and 20 minutes	300 hours Including preparatory and additional work

Students' obligations during the teaching:

Students are required to attend lectures regularly

Literature:

Begon, M., Harper, J. L. & Towsend, C. R. (2014) Ecology: From individuals to ecosystems. Blackwell Scientific Publications, Oxford

Learning outcomes (complied with the outcomes for the study programme):

Knowledge and understanding:

Upon completion of this course the student will be able to:

- Understands the goals and principles of ecology as a science
- Uses and understands methods used in ecology
- Understands an ecological approach to environmental management
- Be trained for laboratory and field research in autecology and synecology

Transferable / Key Skills and other attributes:

- Communication skills: presentations, way of expressing oneself in the written exam.
- Basic laboratory skills
- Teamwork skills

Forms of tests and evaluation:

- completed lab work, 25%
- written examination 50%
- other activities (homeworks…) 25%

Name and surname of teacher and associate:

To be decided

Particularities needed to be emphasized for the subject:

Note (if needed):