Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

SLUkurs

Syllabus

PFS0149 Populations, communities and ecosystems, 1.5 credits

Syllabus approved

2018-01-26

Subjects

Biology

Education cycle

Third cycle

Grading scale

Pass / Failed
The requirements for attaining different grades are described in the course assessment criteria which are contained in a supplement to the course syllabus. Current information on assessment criteria shall be made available at the start of the course.

Language

English

Prior knowledge

Admitted to a postgraduate program. The course is suitable for all graduate students who do not specialize in ecology.

Objective, including learning outcomes

The aim of the course is to introduce basic ecology, particularly theory on populations, communities and ecosystems.

Learning outcomes: Upon completion of the course the student should be able to:
- Explain the concepts of population, community and ecosystem
- Describe how natural selection shapes individuals and populations
- Explain how births, deaths, and movement shape populations
- Apply theory on life tables to estimate changes in population size
- Summarize key processes in population ecology
- Apply theory on meta-population dynamics to study populations
- Apply theory on island biogeography to study communities
- Understand that communities are intimately linked with the abiotic environment by fluxes of energy and matter
- Understand the meanings of species richness and diversity indices
- Understand richness gradients with latitude, altitude and during community succession, and the difficulties of explaining them
- Give examples of bottom-up versus top-down control of ecosystems.

Content

The course starts with an introduction to ecology and the fundamental understanding of evolution to understand processes at the population, community and ecosystem scale. The course then continues with the concept of populations, discussing how the concepts of birth, death and movement shape populations over time. We will also highlight some of the key concepts of population ecology, such as r versus K species, density dependence processes and dispersal. We will then scale up from populations to communities, including meta-population dynamics and island biogeography. Last, we will elaborate on how biotic and abiotic aspects jointly shape ecosystems and discuss key aspects of ecosystem theory such as energy fluxes, and bottom-up versus top-down control of ecosystems.

Requirements for examination

Marking scale: Passed / Failed

Pass grade requirements: Approved written exam

Additional information

Pedagogical form: The course consists of lectures and self-study as the course aims at providing theoretical understanding of the concept of ecology. This will be tested with a written exam.

Preliminary time schedule:
Day (working days) 1-4:
9.00 – 12.00 Lecture
13.00 – 16.00 Self-study of literature
Day 5:
9.00 – 12.00 Exam

The Department reserves the right to cancel the course if there are not more than 5 students who have applied for the course. There is no tuition fee. The student is responsible for any housing and travel costs. Students belonging to the ECOS research school have priority to the course.

Part of research school: ECOS, Ecology and society

Education cycle: Third

Scope: Basic course, aimed at students with non-ecology background

Responsible department

Department of Wildlife, Fish, and Environmental Studies