Study programme(s): BSc in Ecology

Level: BSc studies

Course title: Hydrobiology and freshwater protection

Lecturers: dr Zorica Svirčev, dr Tamara Jurca

Status: mandatory

ECTS: 6

Requirements:

Learning objectives

- acquinting with the population ecology of aquatic organisms, as well as structure and dynamics of aquatic communities
- enabling students to recognise processes in aquatic systems: primary and secondary production, ecology of higher trophic levels, food chain dynamics, bentho-pelagic interactions, application of ecological theory re total and sustainable capacity
- educating about recent problems of freshwater ecosystems, the concept of freshteater quality and biomonitoring
- learning about basic principles of remediation measures

Learning outcomes

After the course students should be capable of:

- defining basic terms related to structure and dynamics of aquatic communities
- applying the theory regarding the total capacity of aquatic ecosystem in practise
- recognising certain groups od aquatic organisms and their common taxa
- identifying issues caused by the freshwater pollution
- applying the basic rules of biomonitoring of freshwaters and assessing the biological aspect of quality
- proposing basic measures of prevention and remediation of inland aquatic systems

Syllabus

Theoretical instruction

Introduction to aquatic research, division and specific types of freshwater ecosystems. Thermic stratification and other vertical gradients, environmental resources. Features of aquatic populations, interactions, aquatic communities of inland waters. Ecology of plankton communitiese. Ecology of benthic communities. Diversity and distribution of nekton, fish ecology. Dynamics of aquatic ecosystems: energy flow, productivity. Total and sustainable capacity of aquatic systems. Saprobiology – trophic state, saprobity, eutrophication. Food chains and food webs, succesion of lake ecosystems. Structure and dynamics of marine communities. Extinction risk of aquatic ecosystems: organic pollution, hydromorphological pressures, climatic change, consequences (water blooming, drinking water scarcity), restoration techniques. Aquatic organisms application in water quality assessments, biomonitoring and bioindication, ecological state assessment. Accelerated eutrophication control – prevention and remediation. Legal aspects of aqauatic ecosystems protections.

Practical instruction: Field work preparation. Equipment for sampling, sampling procedures. Basic techniques of sample processing. Phytoplankton. Zooplankton. Phyto- and zoo-benthos. Freshwater fish. Saprobic system and freshwater quality assessment methods. Biotic and diversity indices. Ecological state assessment using aquatic macroinvertebrates. Examples of pollution remediation of surface freshwaters. Example of ecoremediation using wetlands.

Literature

1. Lampert, Sommer (1997): Limnoecology - the ecology of lakes and streams.
2. Kaiser, Attrill (2011): Marine ecology, processes, systems and impacts, Oxford press.

Weekly teaching load				Other:
Lectures: 3	Exercises:3	Other forms of teaching:	Student research:	

Teaching methodology

Lectures - oral presentation using ppt and video bim, practical part laboratory-based exercises.

Grading method (maximal number of points 100)

During the semester	points	**Final exam**	points
activity during lectures	**5**	written exam	**20**
practical exam	**5**	oral exam	**30**
colloquium	**30**		
seminar	**10**		