

Study Programme: MSc in Ecology
Course Unit Title: Diversity and protection of Fungi
Course Unit Code: ME05
Name of Lecturer(s): Associate Professor Maja Karaman
Type and Level of Studies: Master degree
Course Status (compulsory/elective): elective
Semester (winter/summer): summer
Language of instruction: English
Mode of course unit delivery (face-to-face/distance learning): face to face
Number of ECTS Allocated: 7
Prerequisites: -
<p>Course Aims:</p> <p>The course represents an upgrade to basic courses in General Microbiology and Systematics of Algae and Fungi and aims to familiarize with the importance of protecting the diversity of mushrooms, large groups of organisms of over one million species. The main goal of the course is to acquire knowledge about methods of protection of endangered species, on the one hand, through the preservation of habitat and perception of this component of their survival, and on the other, through the management of populations, determination of conservation priorities. The task of the course is also to study the practice in the protection of endangered species in the world and in our country and to develop active protection projects of certain species threatened with extinction (rare species).</p>
<p>Learning Outcomes: At the end of the course, the student will be able to engage in projects related to the conservation and preservation of endangered mushroom species, their cultivation and use in biotechnological processes.</p>
<p>Syllabus:</p> <p><i>Theory.</i> Students will be introduced to the basic elements and the peculiarities of fungal eco-physiology as a basis for protecting their diversity, genome and their habitats. Introduction to the importance of mushrooms and lichens in ecosystems and the level of their study in the world and in our country. The importance of environmental protection in order to preserve and improve the diversity of fungi and possible directions for the application of mushrooms gene pull. They will also be introduced to the diversity of representatives of individual families, with specific ways of sporulation and spore propagation within various taxonomic and ecological groups of fungi, whose species require different ecological conditions, as well as the characteristics of the diversity of their physiological profiles. Molecular Methods and Electronic Information in the Study and Protection of Endangered Species of Mushrooms, Monitoring of Species and Determination of Mushroom Diversity: Mushrooms on Herbs and Fruit; Terrestrial and lignicolous macrofungi; Lichenized fungi; wood inhabiting Fungi and Plant waste Fungi; Endophytic fungi; Saprobic soil fungi; Fungal Extremophytes; Mutual arbuscular mycorrhizal fungi; Yeasts; Fungi associated with insects and arthropods; Fungus parasites and predators on nematodes and other invertebrates; Parasitic fungi of vertebrates; Coprofile fungi; Anaerobic zoonotic mushrooms associated with animals; Mushrooms in freshwater ecosystems; Marine and estuarine Eumycota; Oomycota, Mycetozoa and other fungi-like organisms. Morphological and ecological diversity of indigenous mushrooms as a basis for sustainable use of wild mushrooms and their cultivation.</p> <p><i>Practice.</i> Getting acquainted with the way of work, accessories and appliances in the laboratory of mycology. Introduction to the basic processes of cultivation and preservation in the formation of a collection of fungal cultures, physiology of fungi and acquiring basic knowledge necessary for isolation the mycelium as the basis for experimental work. Preparation, preservation and use of mushrooms in fungarium; Protocols for the isolation of different groups of fungi and maintenance of cultures; Preservation and distribution of fungal cultures (strains); Familiarizing with the diversity of vegetative and generative "organs": forms of mycelium, sporocarps, vegetative, sexless and sexual propagules.</p>
<p>Required Reading:</p> <p>1. Muller, G. M., Bills, G. F., Foster, M. S. (2004) Biodiversity of FUNGI, Inventory and Monitoring Methods, Elsevier Academic Press, Burlington, San Diego, London.</p>

2. Muntanola – Svetković (1981): **General Mycology**. НИРО Књижевне новине, Београд, 1987. (in Serbian)
3. Бугарски Д: **Pleurotus**. Научни институт за ратаство и повртарство, Нови Сад, 2004. (in Serbian)
4. Јосифовић М: **Forest phytopathology**. Научна књига, Београд, 1951. (in Serbian)
5. Пејин Д.: **Industrial microbiology**. Универзитет у Новом Саду, Технолошки факултет, 2003. (in Serbian)
6. Ивановић М: **Mycoses**. Наука, Београд, 1992. (in Serbian)
7. Стевановић В. (едитор): **Biodiversity of Serbia**, 1995. (in Serbian)
8. Ткалчец, С., Мешић, А., Маточец, Н., Кушан, И (2008): **Red list of croatian Fungi**. Министарство културе, Државни завод за заштиту природе Републике Хрватске. Загреб. (in Croatian)

Weekly Contact Hours:	Lectures: 2	Practical work: 2
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Teaching Methods: Lectures, laboratory exercises, fieldwork, seminar work on selected topics.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	Final exam	points
Active class participation		written exam	25
Practical work		oral exam	25
Preliminary exam(s)	25	
Seminar(s)	25		