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| Study Programme : MSc in Ecology | | | |
| Degree level: Master degree | | | |
| Course Title: DIVERSITY AND PROTECTION OF FUNGI | | | |
| Professor: Dr. Maja Karaman; Dr. Milan Matavulj | | | |
| Elective Course | | | |
| Number of ECTS: 6 | | | |
| Prerequisites: Credit points of Chemistry, Cell Biology, Microbiology and Systematics of Fungi. | | | |
| Course Objective: The course is based on the basic courses of Microbiology and Fungal biology and aims to familiarize students with the importance of protecting the diversity of fungi, large groups of organisms over a million species. The basic goal of this course involves learning about methods of protection of endangered species, on the one hand, through the protection of their habitat and consideration of this component of their survival, and other through the management of fungal populations, by the determination of the conservation priorities. The aim is also the study of best practice in the protection of endangered species and development of active protection project of some endangered (rare) species of mushrooms. | | | |
| Course Outcome: At the end of the course the students will be able to participate in projects related to conservation and preservation of endangered species of fungi, their cultivation and use in biotechnological processes. Also, enabling students for independent and individual recognition of threatening conditions and determination of rare and endangered species. | | | |
| Course Content: <i>Theoretical part:</i> Students get acquainted with the basic elements and characteristics of fungal ecophysiology as the basis for the protection of their diversity, genetic resources and their habitats. Understanding the importance of fungi in ecosystems. The importance of environmental protection in order to preserve and promote the diversity of fungi. Students should become familiar with the variety of representatives of individual families, with specific ways of sporulation and propagation in the different taxonomic and ecological groups of fungi, which require different types of environmental conditions, as well as the diversity of their physiological characteristics. Molecular methods and electronic information in the study and protection of endangered species of fungi, methods of monitoring and determining the diversity of fungi: fungi as parasites, weakness parasites and saprotrophs on plants and fruits; terrestrial lignicolous macrofungi; lichenized fungi and microfungi on wood and plant debris; endophytic fungi, extremophiles; mutualistic arbuscular mycorrhizal fungi, yeasts; fungi associated with insects and arthropods; fungi as parasites and predators on nematodes and other invertebrates, coprophilic mushrooms, zoospore anaerobic fungi associated with animals, fungi in freshwater ecosystems, marine and estuarine Eumycota; Oomycota, Mycetozoa and other fungi-like organisms. Morphological and ecological diversity of indigenous fungi as a base for the sustainable use of wild mushrooms and their cultivation. <i>Practical part:</i> Students get acquainted with the basic processes of cultivation and preservation of culture in forming the collection of mushrooms. Developing of competence in experimental work: inoculation on media and cultivation procedure. Developing skills in results recording. Methods of fungal culture cultivation, conservation and procedures of culture maintenance. Through the practicals, students get acquainted with the cultivating and physiological properties of isolated cultures. Cultivation with the aim of optimization of fungal growth in different conditions of experimental conditions. Preparation, preservation and use of macrofungi in the fungarium; protocols for isolation of different groups of fungi and maintaining the culture, preservation of mushroom culture; Understanding the diversity of vegetative and generative mycelial modifications sporocarps, vegetative, sexual and asexual propagulae. | | | |
| Reading List: | | | |
| 1. Muller GM, Bills GF, Foster MS (2004): Biodiversity of Fungi, Inventory and Monitoring Methods, Elsevier Acad. Press, | | | |
| 2. Bugarski D (2004): Bukovača. Naučni institut za ratarstvo i povrtarstvo, Novi Sad. (In Serbian) | | | |
| 3. Ivanović M(1992): Plant mycoses. Nauka, Beograd. (In Serbian) | | | |
| 4. Stevanović V. (editor) (1995): Biodiversity of Serbia (In Serbian). | | | |
| 5. Tkalčec S, Mešić A, Matočec N, Kušan I (2008): Crvena knjiga gljiva Hrvatske. Ministarstvo kulture, Državni savod sa saštitu prirode Republike Hrvatske. Zagreb. (In Croatian). | | | |
| 6. M. Muntaňola – Cvetković: General Mycology. NIRO Književne novine, Belgrad. (In Serbian). | | | |
| 7. Radnović D, Matavulj M, Karaman M (2007): Mycology. Faculty of Sciences, University of N. Sad, WUS Austria (In Serbian). | | | |
| 8. Matavulj M and Karaman M (2012): Lecture outlines and Power-point presentations (In Serbian and in English) | | | |
| Total hours: | | | |
| Lectures: 2 | Practicals: 2 | Other: | Student research work: |
| Methods of instruction: lectures, practicals, consultations, seminars, colloquia | | | |
| Assessment (maximum number of points 100) | | | |
| Requirements | points | Final exam | points |
| Active participation in lectures | 5 | Practical exam | 15 |
| Colloquia (Pre-exam testing) | 40 | Oral exam | 40 |
| Remark: Students will develop a deeper understanding of experimental work in microbiological laboratory through independent study. Part of the learning material will be available on the internet. | | | |