

Name of the subject: SELECTED TOPICS IN MYCOLOGY		
Teacher(s): Dr. Maja Karaman		
Status of the subject: Elective		
Number of ECTS points: 15		
Condition: -		
Goal The goal of the course is to upgrade knowledge in the basic fields of mycology (anatomy and morphology of fungi, ultra structure of the fungal cell, ecology of fungi, physiology and metabolism of fungi, genetics of fungi; reproduction and distribution; role of fungi in ecosystems; mycorrhizae; fungi as plant and animal pathogens within medical mycology and as agents of biological control; use of fungi in industrial fermentations; diversity and protection of fungi, taxonomy of fungi at the level of molecular markers) to basic courses in microbiology, biology of algae and fungi, systematic of algae and fungi and mycology and aims to introduce the basic principles of these mycological fields and conservation of natural resources, as well as biotechnology and growing of mushrooms.		
Outcome of the subject Students would become familiar with the importance of fungi, primarily members of the Ascomycota and Basidiomycota division, but also with molds and yeasts in nature and for humans within applied mycology. They would also be introduced to the ecophysiology of fungi as a necessary pre-requisite for their cultivation in modern technological processes. They would study the role of macrofungi in the circulation of matter and the flow of energy through ecosystems and the importance of fungi in nature and for humans, with special reference to forest phytopathology and protection of fungal diversity, then fungi as healthy foods, producers of bioactive substances used in industrial mycology: antibiotics, antioxidants, alkaloids; immunomodulators. Special consideration was given to their key role in processes of biodegradation, bioremediation and bioindication within the protection of the environment.		
Content of the subject <i>Theoretical lectures</i> 1) anatomy and morphology of fungi, ultra structure of the cell of fungi, 2) physiology and metabolism of fungi, 3) ecology of fungi, 4) genetics of fungi and taxonomy of fungi at the level of molecular markers; 5) propagation and distribution; 6) the role of fungi in ecosystems; mycorrhizae; fungi as plant pathogens in forest ecosystems, 7) animal and human pathogens within medical mycology, 8) fungi as biological control agents; 9) use of mushrooms in industrial fermentations; 10) Diversity and protection of fungi <i>Study research;</i> work in the field of mycology, which is within the topic of the doctoral dissertation		
Recommended literature 1. Turnet W. B.: Fungal metabolites . Academic press, London, 1971. 2. Eriksson K.-E.L., Blanchette R.A., Ander P: Microbial and Enzymatic Degradation of Wood and Wood Components . Springer-Verlag, 1990. 3. Kendrick, B. (2001): Fifth kingdom . 3 rd Edition. Mycologue Publications, Sidney, Canada. 4. Deacon, J. (2005): Fungal biology . 4th Edition, Blackwell Publishing Ltd. 5. Paterson, R.R.M., Bridge, P.D. (1994): Biochemical techniques for filamentous fungi . IMI Technical Handbooks, No. 1. CAB International, Surrey, UK. 6. Duraković S. i Duraković JI: Mikologija u biotehnologiji . Sveučilište u Zagrebu, 2003. 7. Dix, J.N. & Webster J. (1995): Fungal ecology . Chapman & Hall, London, Glasgow, Weinheim, New York, Tokyo, Melbourne, Madras. 8. Duraković, S. (1996): Primjenjena mikrobiologija . Prehrambeno tehnološki inženjering. Udžbenici Sveučilišta u Zagrebu. Zagreb. 35-58 p.p. 9. Muller, G. M., Bills, G. F., Foster, M. S. (2004) Biodiversity of FUNGI, Inventory and Monitoring Methods , Elsevier Academic Press, Burlington, San Diego, London. 10. Kavanagh K, editor. Fungi: Biology and application . Chichester: Wiley; 2005. 11. Handbook of fungal Biotechnology 2nd Ed Arora D, Marcel Dekker, New York, 2004.		
Number of active classes	Theory:5	Practice: 5
Methods of delivering lectures Lectures / consultations, laboratory work.		
Evaluation of knowledge (maximum number of points 100) Laboratory Project 40; Seminar paper 20; Oral exam 40		