

Study Programme : BSc in Biology			
Degree level: Bachelor degree			
Course Title: EDIBLE AND POISONOUS MUSHROOMS			
Professor: Dr. Maja Karaman, Dr. Milan Matavulj			
Elective Course			
Number of ECTS: 5			
Prerequisites: Credit points of Chemistry, Cell Biology, Microbiology and Systematics of Fungi.			
Course Objective: The aim of this course is to familiarize students with the importance of fungi as a distinct group of organisms in terms of their use in the diet and in medical treatment (functional foods), but also as a group of microorganisms that produce specific toxins and thus could be a risk to human health. To introduce students to the basic morpho-anatomic properties of edible mushroom and toadstool species and their nutritional values, as well as the most important species and genera of poisonous mushrooms, chemical nature of toxic substances, poisoning syndromes and first aid procedures.			
Course Outcome: Recognition (determination) of dominant, the most common species and genera of edible and poisonous mushrooms in nature; Understanding the importance of the use of fungi in the diet as a source of healthy food (vitamins, minerals, essential amino acids, indigestible ballast components) and as a dietary supplements (drinks, tinctures, tonics etc..) Recognition of poisoning syndrome and first aid procedures. Enabling students for independent and individual experimental work in the field of fungal primary and secondary metabolism: experiment design, management of simple processes of bioconversion of low-valuable biologically inactive into the high-valuable compounds in biotechnology; results obtaining and recording, analysis and interpretation of results, and elaboration and presentation.			
Course Content: <i>Theoretical part:</i> Students get acquainted with biology of mushrooms, their life strategy and the environmental importance of fungi; The best practices and procedures for collecting and preparation of edible mushrooms, mushroom determination with special emphasis on the edible and poisonous species; Nutritional value of mushrooms, most important types of edible and medicinal mushrooms, types of mushrooms that are grown for commercial use; chemistry of mushroom toxins, heavy metals, radioactive elements and other toxic, poisonous substances in mushrooms originating from the external environment; false and mild mushroom poisoning, mushrooms and most important toxic poisoning syndromes, recognition of symptoms of mushroom poisoning, first aid procedures and treatment. Students get acquainted also with biology of mushrooms as the basis for bioactive compounds production; Fungal bioactive metabolites, their nomenclature and classification. Fungi and lichens and their bioactive metabolites; Bioactive agents in medicine and pharmacy (antibiotics, antitumor agents, antiviral agents, nematocides; as immunomodulators, etc. Fungi as sources of healthy and organic food (vitamins, minerals, essential amino acids. Emphasis will be placed on research of fungal bioactive compounds, what should enable students to understand contemporary tendencies of their use in various biotechnology fields, as well as to understand their role and problems related to biologically active substances in the environment. <i>Practical part:</i> Field work: identifying edible and poisonous species of mushrooms and ways of collecting edible species; laboratory work - determination of edible and poisonous species of mushrooms, mushroom conservation. 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 properties of isolated cultures.			
Reading List: 1. Chang ST & Miles P (2004): Mushrooms– cultivation, nutritional value, medicinal effect and environmental impact, 2 nd Edition, CRC Press, Boca Raton, Florida. 2. Bresinsky A & Besl H (1990): A Colour Atlas of Poisonous Fungi, Wolfe Publishing Ltd., London, England. 3. Uzelac B (2005): Skripta za sakupljače gljiva - početni kurs, Beograd. 4. Jordan M (1998): The Encyclopedia of Fungi of Britain and Europe, David & Charles, Edinburgh. 5. Courtecuisse R and Duhem B (1995): Mushrooms and Toadstools of Britain & Europe, Collins, London. 6. Phillips R (1994): Mushrooms and other Fungi of Great Britain and Europe, Macmillan, London. 7. Uzelac B (2009): Gljive Srbije i Zapadnog Balkana, BGV, Logik, Beograd 8. Radnović D, Matavulj M, Karaman M (2007): Mycology. Faculty of Sciences, University of Novi Sad, WUS Austria (In Serbian). 9. Karaman M and Matavulj M (2011): Lecture outlines and power-point presentations (In Serbian)			
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.			