Study Programme : BSc in Ecology

Degree level: Bachelor degree

Course Title: SYSTEMATICS OF ALGAE AND FUNGI

Professor: Dr. Milan Matavulj, Dr. Maja Karaman

Required Course

Number of ECTS: 7

Prerequisites: - A course in Cell Biology

Course Objective: A course designed to acquaint students with the position of algae and fungi in the system of biota, with phylogenetic relationships in the frame of lower taxonomic categories. The focus will be on the biology of these organisms, specifically on understanding their elementary functional structure and organization, their basic matabolism, with the aim to understand their role and importance in the nature and significance for human species, and enabling students for determination to higher taxonomic categories.

Course Outcome: This program provides students with the necessary basic knowledge on morpho-anatomic characteristics of algae, fungi and lichens, as the basis for understanding classification system, as well as skills to make preparations, to recognize features important for identification and determination of species to the higher taxonomic categories, as well as to understand their significance for humans and their important role in the mater cycle in the nature.

Course Content:

Theoretical part: Through the lectures in this course students get acquainted with the contemporary concept of the position of of algae and fungi in the system of living beings, with their morphology, citology and functional composition, biochemistry and physiology, development and evolution, as the basis for taxonomic clasification of these organisms, and with their role in the nature and significance for human beings, all organized in educational topics: Short history and interrelationship between systematics and other scientific disciplines; Comparative rewiev of morphology, functional structure, and reproduction of algae, fungi, fungi-like organisms, and lichens; Metabolic characteristics, biochemistry and bioenergetics, and specificities of algal and fungal genetics; ecology and systematics; Importance and role of algae and fungi in the nature: pathogenicity, eucaryotic microorganisms in medicine, veterinary medicine, pharmacy, plant protection, biodegradations; Biotechnological application of algae and fungi: food production, biotransformations, fermentative industry, bioactive metabolites, and algae and fungi in the environmental protection.

Practical part: A practical work is designed to acquaint students with behavioral specificities and working rules in microbiological laboratory; with the mode of use of laboratory equipment; with the preparations of objects for light microscopy. Also students get acquainted with the growth of algae, fungi, and fungi-like organsims in laboratory, in different media. Microscopy enable students to learn characteristics of morphology and functional organization of algae, fungi, and lichens, and gaining basic knowledge necessary for isolation, maintenance in laboratory conditions, cultivation and preparation, as the basis for students laboratory experimental work, as well as the basis for understanding and distinguishing characteristics of algae and fungi, necessary for procedure of identification and determination of studied organisms.

Reading List:

1. Jelena Blaženčić (1988): Systematics of algae. Naučna knjiga, Belgrade (In Serbian)
2. Slavka Gajin, Milan Matavulj, Miroslav Gantar (1987): Fundamentals in Microbiology, algae and fungi, Manual. University of Novi Sad, Faculty of Sciences, Novi Sad, (In Serbian)
3. B. Ranković (2003): Systematics of Fungi. Faculty of Sciences. Kragujevac (In serbian).
4. Matavulj M. (2012): Lecture outlines and Power-point presentations (In Serbian and in English).
5. Madigan MT, Martinko JM (2006): Brock Biology of Microorganisms. Prentice Hall, Pearson Education Internat. (In English)

Total hours:				
Lectures: 3	Practicals: 3	Other: -	Student research work:	Seminars and coloquia

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 tests)	40	Oral exam	40

Remark: - Students will develop a deeper understanding of one area of fungal biology through independent study. Part of the learning material will be available on the internet.