Study Programme: MSc Ecology and Nature protection

Course Unit Title: Aerobiology

Course Unit Code: MEZP32

Name of Lecturer(s): Assoc. Prof. Miloš Ilić, PhD; Ass. Prof. Bojana Bokić, PhD; Branko Šikoparija, PhD

Type and Level of Studies: Master academic studies

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:

Course Aims:

To introduce the student to the aerobiology – discipline which investigates particles of biological origin in atmosphere, principles of their transport, release the particles from the source, their deposition, and their effects in the environment. Training for completing the basic sampling methods, sample analyses and data processing. To introduce the students with diverse application of results of aerobiological research in medicine, agriculture, forestry, climatology and forensic science.

Learning Outcomes:

Upon completion of the course, students will be able to plan and conduct research using methods of aerobiology (in plant protection, occupational safety and health, meteorological stations, allergology laboratories, and forensic laboratories). Students will be able to collect and analyze samples, and to interpret data appropriately.

Syllabus:

Theory

Aerobiology – definition, importance, and historical background. Review of biological particles, which are the objects of aerobiological research, their origin, pathways of release into the atmosphere, ways of transport and elimination from the atmosphere, and their impact on the environment. Most commonly used sampling methods (sedimentation, inertial, flow cytometry). Physical principles which enable isolation of particles suspended in the air. Equipment used for sampling in aerobiological research (Durham samples, Andersen samples, Hirst sampler, Cyclone sampler). Sampling, processing, and analysis (quantitative, qualitative, and prediction of spatial and temporal occurrence) of pollen, spores, fungi, and bacteria suspended in the atmosphere. Application of aerobiology in medicine, occupational safety and health, agriculture, forestry, climatology, and forensic science.

Practice

Training in the use of Durham, Andersen, and Hirst air-sampling devices, as well as cyclones (SKC BioSamples, SASS2300). Preparation of samples for analysis, and examination of samples using light microscopy. Identification of the most significant allergenic pollen and fungi spores which can be found in the air samples.

Required Reading:

1. Cox, C.S., Wathes, C.S. (1995): Bioaerosols handbook. Lewis Publishers.
2. Relevant scientific papers, Atlases, and available Databases.

Weekly Contact Hours:	**Lectures:** 2	**Practical work:** 2+5

Teaching Methods:

Individual work, group work, microscopy examination and analyses, laboratory work			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	**Final exam**	points
practical exam	30	oral exam	40
seminars	30		