Course Unit Descriptor

Study Programme: Veterinary medicine

Course Unit Title: Environment protection in intensive animal production

Course Unit Code: 3IVM5I92

Name of Lecturer(s): Assistant Professor Nikolina Novakov, Teaching assistant Bojana Vidović

Type and Level of Studies: Integrated Academic Degree

Course Status (compulsory/elective): Elective

Semester (winter/summer): Winter

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 3.5

Prerequisites: None

Course Aims: The subject enables student to acquire knowledge in the field of environmental protection, which is threatened by intensive animal production. The student should acquire skills of application of regulations, recommendations and standards in environmental protection that are valid in the European Union, as well as the ability to solve practical problems in the field of the subject.

Learning Outcomes: After completion of the course from this subject a student should be able to: 1. define and explain the concepts from environmental protection and influence of waste from modern intensive animal production; 2. analyze the harmfulness of large quantities of solid and liquid manure, waste water and gas to man, animals, soil, surface water flows, biodiversity and climate; 3. master risk analysis for all systems of animal production; 4. implement appropriate management systems in intensive animal production and ways of preventing the pollution of the environment; 5. identify and evaluate the dangers in the food chain "from farm to fork", within the HACCP system; 6. participate individually and in a team in solving of practical problems in the field of the subject.

Syllabus:

Theory

The impact of waste from modern intensive animal production, including aquaculture on the environment. Analysis of the harmfulness of large quantities of solid and liquid manure, waste water and gases to humans, animals, soil, surface water flows, biodiversity and climate. Risk analysis for all systems of animal production. Systems for animal production with low emission of harmful products. Planning the most suitable locations for facilities for intensive animal production. Fundamentals of management systems in intensive animal production and ways of preventing environmental pollution. The management system of animal production and processing. Identification and evaluation of the danger in the food chain "from farm to fork" within the HACCP system.

Practice

The application of acquired knowledge in selected farm facilities and in companies producing food of animal origin. Creating documents, internal verifications, corrective and preventive measures, improvement, designing of system and devices for the treatment of animal waste, the formation of bio-indicators during the purification of waste materials, learning about the hazards of products formed in animal production and processing; Forming a team, preparation and verification of the HACCP system.

Required Reading:

1. Aćamović, N., Kljajić, R. Development of systems of analysis, dangers and critical control points (HACCP) in food production. Scientific Veterinary Institute Novi Sad and Green Quality, Kragujevac, 2003.

2. Kelly, A.M., Marshak, R.R. Veterinary medicine, food security and the global environment. Rev. sci. tech. Off. int. Epiz.,2009.
3. Grimm, E. Environmental Legislation in the European Union to Reduce Emission from Livestock Production, 2012.
4. Thornton, P.K. Livestock production: recent trends, future prospects. Phil. Trans. R. Soc. B, 2010.

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

Teaching Methods:

Within the methods of teaching, lectures combined with interactive teaching in all subject chapters are used. Practical teaching includes chapters: Establishment of bio indicators during the purification of waste materials and Introduction to the harmfulness of products formed in animal production and processing. Other exercises which are carried out in the laboratory include chapters: Creating documents, internal verification, corrective and preventive measures, improving, design of system and devices for the treatment of animal waste. One seminar on topics from any of theory chapters is necessary. Testing of knowledge is implemented through two obligatory tests, practical and oral exam that includes all chapters of the subject.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Active class participation	5	written exam	
Practical work	10	oral exam	50
Preliminary exam(s)	20	…….	
Seminar(s)	15		

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.