Course Unit Descriptor

Study Programme: Veterinary Medicine

Course Unit Title: Radiobiology and Radiation Hygiene

Course Unit Code: 3IVM10O53

Name of Lecturer(s): Assistant Professor Annamaria L. Galfi Vukomanović

Type and Level of Studies: Undergraduate studies

Course Status (compulsory/elective): Compulsory

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: 2

Prerequisites: None

Course Aims:

The subject enables student to acquire knowledge in the field of biological effects and mechanisms of interactions of ionizing radiation, radiopathology, radiation syndrome, radiation injuries of domestic animals exposed to radiation. Student should acquire skills of implementation of radiation-hygienic control of animals and veterinary-sanitary objects, control and measures for ionizing radiation protection and the ability to solve practical problems in the field of the subject.

Learning Outcomes:

After completion of the course from this subject student should be able to: 1. define and explain the concepts of radioactivity, types and sources of ionizing radiation, contamination of the environment and radiopathology; 2. implement the detection and dosimetry of ionizing radiation; 3. apply the methods and procedures of decontamination; 4. analyze all aspects of the radiation syndrome; 5. estimate the radiation risk and organize the protection of animal production; 6. participate individually and in a team in solving of practical problems in the field of the subject.

Syllabus:

Theory

Radioactivity; Types and sources of ionizing radiation; Radioactive contamination of the environment and plants of animal production; Exposition to ionizing radiation and radiation accidents; Detection and dosimetry of ionizing radiation; Biological effects of ionizing radiation and radiobiological response; Radiopathology; Radiation syndrome in domestic animals; Associated radiation injuries and radiological poisoning; Biodosimetry of radiation; Radioprotection resources; The radiation-hygienic control of animal production cycle; Radiation-hygienic expertise of cattle for slaughter and animal production; Evaluation of radiation hazards and organization of control and radiation protection of animal production; Decontamination, transport and storage of radioactive waste; Standards and regulations related to radiation protection

Practice

Space, organization and operation of the radiological laboratories; Measuring instruments, application, calibration and operating techniques; Detection, dosimetry and measurement of radioactivity; Personal equipment for protection of ionizing radiation and procedures in the radiation fields and contaminated area; Triage and preparation of samples for measurement of radioactivity; Methods and procedures for decontamination; Analysis of etiology, pathogenesis, types, flow and phase of ARS; Analysis of the symptoms and the clinical picture during ARS; Analysis of pathological and histopathological changes in the course of ARS; Biodosimetry assessment of radiation damage and radioprotection resources; The radiation-hygienic control of animals and objects of veterinary-sanitary control; Assessment of radiation

situation on the farm, slaughterhouse and dairy in emergency conditions and radiation risk.

Required Reading:

1. Saračević Lejla: Veterinarska radiobiologija sa radijacionom higijenom. Izd. DES Sarajevo, 1999.
2. Mitrović R., Kljajić R., Petrović B.: Sistem radijacione kontrole u biotehnologiji - Vodeća knjiga. Izd. Naučni institut za veterinarstvo, Novi Sad, 1996.
3. Yarmonenko S. P. Radiobiology of Humans and Animals. Mir Publishers, Moscow, 1988.

Weekly Contact Hours: 45	**Lectures:** 30	**Practical work:** 15

Teaching Methods:

Lectures, Practical classes, Consultations

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Active class participation	5	written exam	30
Practical work	5	oral exam	30
Preliminary exam(s)	20		
Seminar(s)	10		

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