

Study Programme: Veterinary Medicine
Course Unit Title: Radiohygienic Control and Protection of Animal Production Cycle
Course Unit Code: 3DVM2I32
Name of Lecturer(s): Assistant Professor Annamaria L. Galfi Vukomanović, Assistant Professor Marija J. Pajić
Type and Level of Studies: Doctoral 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: 6
Prerequisites: None
Course Aims: Training students about the harmful effects of ionizing radiation, prevention and protection.
Learning Outcomes: Upon completion of the course from this subject and passing the exam, the student should be able to: 1. define and explain the ways of spreading radionuclides and radiocontamination of the environment; 2. conduct detection and identification of radionuclides in veterinary-sanitary control cases; 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: <i>Theory</i> Radioactive contamination of animal production: ways of spreading radionuclides; Migration and transfer of radionuclides; Biologically important radionuclides: natural and artificial; Bioindicators of radioactive contamination; External and internal contamination. Radiation-hygienic control of the animal production cycle: Early warning system for radiation hazards and background measurement; Organization of work and monitoring system; Detection and identification of radionuclides in veterinary-sanitary cases; System, organization and procedure of radiation-hygienic control and expertise cases of objects under the state veterinary-sanitary control; Preservation of foods of animal origin by the use of ionizing radiation. Radiation-hygienic expertise for livestock for slaughter and food: Organization of inspection points and animal triage; Inspection and triage of animals: dosimetric control, radiometric control, clinical examination; Decontamination of animals: triage, methods, space, organization of work and verification of performance; Decontamination of foodstuffs of animal origin: self-decontamination, surface layer removal, radioisotopic dilution; Decontamination of animal feed: self-decontamination, surface layer removal, radioisotopic dilution; Organization and procedure of slaughter of irradiated and contaminated animals. Assessment of radiation hazard and organization of animal production: Radiation hazard assessment; Measures for protection of animals: removal, hermetization of mansions, diet; Physical protection measures; Measures for the protection of foodstuffs of animal origin (dairies, slaughterhouses); Measures for the protection of animal feed. Decontamination, transport and storage of radioactive waste: Decontamination methods; Collection and transport of radioactive waste; Storage of radioactive waste. <i>Practice</i> Radiological laboratory: space, organization and operation; Measuring instruments, purpose and technique of work. Detection and dosimetry of ionizing radiation: principles of detection and dosimetry; Measuring instruments; Radiation doses: exposing, absorbed, equivalent; Measurement of doses and dose units; Measurement of radioactivity and

radioactivity units; Types of detector: Geiger-Mueller counter, ionization chamber, scintillation detectors; Laboratory counters; Standardization of measuring devices; Types of dosimeters; Personal dosimeters: film dosimeter, TLD dosimetry, pocket dosimeters; Measurement of radiation dose; Dosimetry of the radiation field. Personal protection of the product in the radiation zone: Mask, suit, personal dosimeter; Procedure in the radiation and contamination zone. Low radioactivity: Preparation of samples; Measurement of total beta activity; Gama spectrometric analysis; Analysis of results. High radioactivity radiometry: Preparation of samples; Triad of samples. Decontamination methods: Decontamination procedures; Measurement of decontamination; Radiation-hygienic control of animals and objects under the state veterinary-sanitary control: Control procedures at the farm; Control procedures in slaughterhouses and dairies; Radiation-hygienic expertise of animals and objects under the state veterinary-sanitary control: Expertise of foodstuffs of animal origin; Animal Feed Expertise; Assessment of the radiation situation in emergencies situation and radiation risk: Assessment of the radiological situation on the farm; Evaluation of the radiative situation in production facilities; Risk assessment.

Required Reading:

1. Mitrović R.: Radioaktivnost u životnoj sredini – ugroženost, zaštita, preventiva, radioaktivna dekontaminacija. Izd. "VRELO", Zemun, 2001.
2. Foreign and domestic journals and other papers from symposia and congresses, dedicated to the above topics

Weekly Contact Hours: 90

Lectures: 45

Practical work: 45

Teaching Methods:

Lectures, Practical classes, Consultations

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	Final exam	points
Active class participation	10	written exam	/
Practical work	10	oral exam	60
Preliminary exam(s)	/		
Seminar(s)	20		

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