

## COURSE INFORMATION SHEET

<b>University:</b> Catholic University in Ružomberok	
<b>Faculty:</b> Faculty of Health	
<b>Course code:</b> KRAT/54T1044W/17	<b>Course title:</b> Radiation Protection
<b>Type and range of planned learning activities and teaching methods:</b> <b>Form of instruction:</b> Lecture / Seminar <b>Recommended study range:</b> <b>hours weekly:</b> 3 / <b>2 hours per semester:</b> 36 / 24 <b>Teaching method:</b> on-site (distance method according to the document Príkaz rektora P-8/2020 since 15. 10. 2020)	
<b>Credits:</b> 5	
<b>Recommended semester/trimester:</b> 5.	
<b>Level of study:</b> I.	
<b>Prerequisites:</b> KRAT/54T1017W/15	
<b>Requirements for passing the course:</b> Active participation at lab exercises is necessary to pass the exam. The final evaluation is based on the results of written test and evaluation of student activity on lab exercises (given partial tasks and problems). The subject is taught in winter semester and is evaluated only in the examination period of the winter semester of the current academic year. The subject evaluation: A – 100%-93% B – 92%-85% C – 84%-77% D – 76%-69% E – 68%-60% FX – 59%- 0%	
<b>Learning outcomes of the course:</b> The objective of the course: To explain the expert terms from the field of radiation protection and dosimetry. To get to know with the effects of ionizing radiation on human organism. To give practical information on the rules of work with ionizing radiation sources. The rules of radiation protection and safety of work with ionizing radiation sources. The knowledge of rules and legislation standards necessary for qualified work, decisions and management of work groups. Theoretical knowledge: The student defines basic terms from the field of nuclear physics, characterizes the particular types of radiation, describes effects and consequences of ionizing radiation impact on organism. They list the basic principles of radiation protection for staff using ionizing radiation (occupational radiation protection) and for general population as well. They are able to compare the standards with the real conditions during evaluation occupational and general population radiation exposure. They describe health protection standards in the case of radioactive substances leakage into environment by accident and the ways of decontamination. They are able to check correct operation with radioactive waste. Practical skills:	

The student applies the knowledge from the field of radiation protection in practice, has command in a dosimetry. They are able to review the danger level in the case of radioactive substances leakage into environment, decides the expert operation for radiation protection management. They evaluate the radiation exposure of staff using ionizing radiation sources and general population as well.

**Course contents:**

1. Repetition of the basics terms from nuclear physics, nuclear reactions, radiation types, quantities and units used in the field of radiation protection.
2. The sources of ionizing radiation. The primary effects of ionizing radiation. The factors, which affect the effects of ionizing radiation.
3. The injury of organs by ionizing radiation.
4. Manifestation of the organ injury by ionizing radiation. The radiation sickness.
5. The basic principles of radiation protection. Dosimetry.
6. The dose limits, the consequences of ionizing radiation application in medicine.
7. Dosimetry.
8. Radioactivity in the environment and workplace.
9. The methods using ionizing radiation in medicine and principles of radiation protection at work.
10. The accidents during use of ionizing radiation sources.
11. The legislation in the field of radiation protection.
12. The radiation risks in the world - radiation accident and catastrophes with ionizing radiation.

**Recommended or required literature:**

Klener Vladislav et al., Principy a praxe radiační ochrany, AZIN 2000, 606 p., ISBN 80-238-3703-6  
Sabol J., Vlček P., Radiační ochrana v radioterapii, Praha, Nakladatelství ČVUT, 2011, 250 p., vysokoškolské skriptum  
Podzimek F., Radiologická fyzika: fyzika ionizujícího záření, Praha, Nakladatelství ČVUT, 2013, 334 p., vysokoškolské skriptum  
Singer J., Dozimetrie ionizujícího záření, Jihočeská Univerzita v Českých Budějovicích, 2005, 67p., ISBN 80-7040-752-2  
Zachar, L. et al.: Hodnotenie vybraných parametrov kvality v projekčnej rádiografii, Ružomberok, VERBUM, 2019, 92p., ISBN 978-80-561-0726-3

**Language of instruction:**

Slovak language

**Notes:**

**Course evaluation:**

Assessed students in total: 87

A	B	C	D	E	FX
35.63	26.44	24.14	11.49	2.3	0.0

**Name of lecturer(s):** Ing. Anita Klačková, Ing. Martin Bereta, PhD.

**Last modification:** 28.11.2020

**Supervisor(s):** doc. MUDr. Pavol Dubinský, PhD., prof. MUDr. Anton Lacko, CSc.