

### RTU/LU Course

#### General data

Code	HEP006
Course title	Radiation safety
Course status in the programme	Obligatory
Course level	Doctoral Studies
Course type	Academic
Field of study	Medical particle physics
Responsible instructor	Elina Pajuste
Volume of the course: parts and credits points	1 part, 1.0 Credit Point, 1.5 ECTS
Language of instruction	EN
Possibility of distance learning	Not planned
Abstract	The course will provide an introduction to the ionizing radiation and related risks in the occupational environment and everyday life, as well as the legislation the EU and the Republic of Latvia. Students will be introduced to the ionizing radiation sources, their properties, radiation interaction with matter and its health effects, basics of the dosimetry and risk assessment.
Goals and objectives of the course in terms of competences and skills	The goal of the course is to provide an understanding of the ionizing radiation (IR), its safety and the relevant regulatory enactments. Objectives: - To provide knowledge about IR, its properties and sources in the occupational environment and everyday life - to provide understanding of the basic safety requirements for working with IR based on regulatory enactments and potential risks - to provide competence to carry out independent risks assessment and, on the basis of it, to plan protecting measures in the work with IR
Structure and tasks of independent studies	Students will be provided with further learning materials in the e-studies platform. Each topic will have online test and practical assignment to be submitted in the e-studies platform. Main task of the independent studies will be in-depth learning of the topic discussed during the contact hours and training to apply obtained theoretical knowledge for solving practical tasks.
Recommended literature	<ol style="list-style-type: none"> <li>1. Radiation protection of the public and the environment: International Atomic Energy Agency, Vienna, 2018. 51 pp. IAEA safety standards series, no. GSG-8</li> <li>2. Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, , International Atomic Energy Agency, Vienna, 2014, 436 pp IAEA Safety Standards Series No. GSR Part 3,</li> <li>3. Law On Radiation Safety and Nuclear Safety, Latvijas Vēstnesis, 394/395, 07.11.2000.</li> <li>4. Republic of Latvia Cabinet Regulation No. 149 Regulations for Protection against Ionising Radiation, Latvijas Vēstnesis, 56, 12.04.2002</li> </ol>
Course prerequisites	Physics
Courses acquired before	-

#### Course contents

Content	Full- and part-time intramural studies		Part time extramural studies	
	Contact Hours	Indep. work	Contact Hours	Indep. work
Ionizing radiation sources, radioactivity, nuclear reactions, accelerated particles	2	6		
Ionizing radiation interaction with matter, basic mechanisms, units	2	6		
Ionizing radiation health effects	2	6		
Ionizing radiation measurements, dosimetry	2	6		
Legislation, risks assessment	2	6		
	10	30		

#### Learning outcomes and assessment

Learning outcomes	Assessment methods
Knowledge on sources of ionizing radiation, their characteristics, units	Test
Ability to recognize possible sources in the occupational environment and perform calculation on their characteristics	Practical assignment
Knowledge on radiation – matter interactions, their mechanisms and units	Test
Ability to estimate consequences of the interaction of matter and radiation, perform calculation of the	Practical assignment, lab work

