Applicable for the academic year 2018/2019

Attachment No. 1 to Rector's ordinance No. /2016

DESCRIPTION OF THE COURSE OF STUDY

Course code	**12.6-3LEK-F-PJwM**	
Name of the course in	Polish	**Promieniowanie jonizujące w medycynie**
	English	**Ionizing radiation in medicine**

1. LOCATION OF THE COURSE OF STUDY WITHIN THE SYSTEM OF STUDIES

1.1. Field of study	medicine
1.2. Mode of study	full-time
1.3. Level of study	uniform Master's study
1.4. Profile of study*	practical
1.5. Specialization*	lack
1.6. Unit running the course of study	Faculty of Health Sciences
1.7. Person/s preparing the course description	prof. dr hab. Janusz Braziewicz
1.8. Person responsible for the course of study	prof. dr hab. Janusz Braziewicz
1.9. Contact	janusz.braziewicz@ujk.edu.pl

2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

2.1. Affiliation with the module	optional – faculty
2.2. Language of instruction	English
2.3. Semesters in which the course of study is offered	The choice between 2nd-9th semesters
2.4. Prerequisites*	The basics of physics

3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

3.1. Form of classes		Lecture: 15, classes: 20
3.2. Place of classes		Courses in the teaching rooms of UJK
3.3. Form of assessment		Credit with grade
3.4. Teaching methods		Lecture, classes
3.5. Bibliography	**Required reading**	Radiation Dose from Medical Imaging: A Primer for Emergency Physicians, Jesse G.A Jones, MD, Christopher N. Mills, MD, MPH, Monique A. Mogensen, MD, and Christoph I. Lee, MD
	Further reading	

4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED TEACHING OUTCOMES

4.1. Course objectives ***(including form of classes)***

C1 – acquaintance with the physical basics of equipment used in medicine;
C2 – acquaintance with the construction and operation of equipment used in medicine;
C3 – acquaintance with the principles of using the equipment for research in medicine;
C4 – acquaintance with the quality control of equipment used for research in medicine.

4.2. Detailed syllabus ***(including form of classes)***

1. Construction, application and use of therapeutic devices: linear accelerators, therapeutic X-ray apparatus, equipment using radioactive sources, devices for brachytherapy with low and high dose rate.
2. The construction, application and use of devices for treatment using a modulated beam intensity.
3. The construction, application and use of control devices, preparation and implementation of radiotherapy: therapeutic simulators, devices tomography using cone beam.
4. The construction, application and use of diagnostic equipment: cameras X-ray, CT scanners, for positron emission tomography, gamma cameras, SPECT.
5. Specialized software used in therapeutic devices, apparatus for the design and radiotherapy as well as diagnostic equipment.

4.3 Education outcomes in the discipline

Code	**A student, who passed the course**	**Relation to teaching outcomes**
within the scope of **KNOWLEDGE:**		
W01	knows natural and artificial sources of ionizing radiation and its interaction with the matter;	B.W6

W02	knows the physical basis of non-invasive imaging methods;	B.W8
W03	knows the physical principles of selected therapeutic techniques, including ultrasound and radiation.	B.W9
within the scope of **ABILITIES:**		
U01	uses knowledge of the laws of physics to explain the uses the knowledge of the laws of physics to explain the impact of external factors such as temperature, acceleration, pressure, electromagnetic fields and ionizing radiation on the body and its elements;	B.U1
U02	assesses harmful ionizing radiation dose and applies the principles of radiation protection;	B.U2
U03	uses databases, including online ones, and searches for necessary information using available tools;	B.U11

4.4. Methods of assessment of the intended teaching outcomes

Teaching outcomes *(code)*	**Method of assessment (+/-)**																				
	Exam oral/written*			**Test***			**Project***			**Effort in class***			**Self-study***			**Group work***			**Others***		
	Form of classes			***Form of classes***			***Form of classes***			***Form of classes***			***Form of classes***			***Form of classes***			***Form of classes***		
	L	*C*	...	*L*	*C*	...	*L*	*C*	...	*L*	*C*	...	*L*	*C*	...	*L*	*C*	...	*L*	*C*	...
W01																					
W02																					
W03																					
U01																					
U02																					
U03																					
...K01																					
...																					

delete as appropriate

4.5. Criteria of assessment of the intended teaching outcomes

Form of classes	**Grade**	**Criterion of assessment**
lecture (L)	**3**	61% -68% correct answers
	3,5	69% - 76% correct answers
	4	77% - 84% correct answers
	4,5	85 % -92% correct answers
	5	93-100
classes (C)*	**3**	61% -68% correct answers
	3,5	69% - 76% correct answers
	4	77% - 84% correct answers
	4,5	85 % -92% correct answers
	5	93-100
others (...)*	**3**	
	3,5	
	4	
	4,5	
	5	

5. BALANCE OF ECTS CREDITS – STUDENT'S WORK INPUT

Category	Student's workload
	Full-time studies
NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/	**35**
*Participation in lectures**	**15**
*Participation in classes, seminars, laboratories**	**20**
*Preparation in the exam/ final test**	
*Others**	
INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/	**15**
*Preparation for the lecture**	
*Preparation for the classes, seminars, laboratories**	**5**
*Preparation for the exam/test**	**10**
*Gathering materials for the project/Internet query**	
Preparation of multimedia presentation	
*Others**	
TOTAL NUMBER OF HOURS	**50**
ECTS credits for the course of study	**2**

Accepted for execution *(date and signatures of the teachers running the course in the given academic year)*

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