AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Health and Radiation Physics								
Course Code	FİZ319		Couse Level	First Cycle (Bachelor's Degree)					
ECTS Credit	6	Workload	156 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	1. To gain knowledge about ionizing radiation and radioprotection. 2. To provide knowledge about the basics of Health Physics and to provide career guidance to whom willing to study on that subject.								
Course Content	This course contains basic aspects of radiation physics, principles of radiation protection and biological effects of radiation.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion								
Name of Lecturer(s)	Assoc. Prof. Melis GÖKÇE								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	70
Quiz	4	10
Assignment	4	10

Recommended or Required Reading	
1	1) Faiz M. Khan, The Physics of Radiation Therapy, Williams and Wilkins, 3. Edition. 530, Walnut, Street, Philadelphia, PA, 19106, USA.

Week	Weekly Detailed Course Contents	
1	Theoretical	Historical overview and classification of radiation.
2	Theoretical	Ionizing radiation
3	Theoretical	Ionizing radiation
4	Theoretical	Non ionizing radiation
5	Theoretical	Interaction of Radiation with matter
6	Theoretical	Preparation of radioisotopes and radioactive decay
7	Intermediate Exam	MIDTERM EXAM
8	Theoretical	Dose Calculations
9	Theoretical	Radiation Measurement and radiation detection.
10	Theoretical	Radiation dosimetry
11	Theoretical	Biological effects of radiation, public doses, genetic risks, anomalies of chromosome.
12	Theoretical	Radioprotection.
13	Theoretical	Physics of radiology
14	Theoretical	Physics of nuclear medicine.
15	Theoretical	Radiotherapy physics.
16	Final Exam	Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	3	84
Assignment	4	3	1	16
Quiz	4	3	1	16
Midterm Examination	1	16	1.5	17.5

Final Examination	1	21	1.5	22.5
			Total Workload (Hours)	156
			[Total Workload (Hours) / 25*] = **ECTS**	6
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	Ability to understand properties of radiation and biological effects.
2	Ability to comprehension the types of radiation.
3	Ability to learn the interaction of radiation with matter and to be able to solve the problems
4	Ability to comprehension the radioactive decay law and to be able to solve problems.
5	Ability to make dose calculations.
6	Ability to comprehension the basics of radiation detection and protection.
7	Ability to learn the phenomena of radiology physics.
8	Ability to learn the phenomena of nuclear medicine.
9	Ability to learn the phenomena of physics of radiotherapy.
10	Ability to gain knowledge about environmental and social radiation protection aspects.

Programme Outcomes *(Physics)*	
1	To understand the importance of physics by understanding the general concepts of physics, matter and energy
2	To be able to define the movements of matter and to distinguish the characteristics of movements under different force (potential)
3	Be able to say the meaning of Lagrange and Hamiltonian formulations of the movement and apply them to simple problems,
4	To be able to express the fundamental concepts such as time, space, force, momentum and energy in the movements of matter close to the speed of light and be able to solve and interpret the simple problems related to
5	To be able to establish the relationship between electric and magnetic forces and to be able to illustrate their applications to technology and solve problems related to the movement of particles in electric and magnetic fields
6	Be able to say the basic laws of electromagnetics and apply them to problems, illustrate their applications to simple technology
7	To be able to tell the reasons of the differences between the classical cases and the quantum scale and explain the reasons
8	Explain the concepts of discontinuity, uncertainty, matter-antimatter, indecisiveness of quantum physics with examples and explain simple problems related to the subject.
9	To be able to solve the problems of micro-particles under different simple potentials and be able to say their meanings
10	To be able to establish the relationship between the movements and properties of multi-particle systems and the laws of probability and solve simple problems
11	To be able to illustrate the laws, meanings and applications of thermodynamics and use them
12	Be able to use their knowledge about quantum physics and mechanics in explaining some properties of atoms and nuclei
13	To be able to show the meanings of some theoretical concepts by experimenting, and develop a strong relationship between thought and the real world, develop analytical thinking
14	To be able to apply the meanings of the basic laws of physics, their comprehension of universality and the relations between them and the unity of the laws of nature.
15	Use computer to solve physics problems
16	To be able to understand the problems by using their analytical knowledge skills and to propose solutions by dealing with the laws of physics
17	Be able to use the knowledge of physics to understand new technologies
18	To be able to tell the relations between symmetry and conservation laws in laws of physics

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L6	L7	L8	L9	L10
P1	4							
P7		4						
P12		3	4					
P16								4
P17				4	4	4	4	