Fizik Bölümü / PHYSICS /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
FZK-4028	Radyoteraphy Physics	2.00	2.00	0.00	3.00	7.00

Course Detail

Course Language	:	Turkish
Qualification Degree	:	Bachelor
Course Type	:	Optional
Preconditions	:	Not
Objectives of the Course	:	Basic radiotherapy techniques, devices used in these techniques, treatment planning, immobilization tools of simulation, isodose curves, dose calculations, the importance of the physicist in the radiotherapy group and the importance of group work.
Course Contents	:	General biology of cancer, mutagens that cause cancer and their mechanism of action, Classification and naming of tumors, Radiobiology, Basic radiation physics, Radiation units, Aim in radiotherapy, the team in radiotherapy and the role and importance of the physicist in this team, Concepts of target volume and volume in radiotherapy, Aim of simulation and simulators Immobilization tools, Treatment planning systems, Fractionation, isodose curves and calculation, Bolus, compensators usage purposes, Treatment areas in radiotherapy, Treatment types used in radiotherapy External and internal radiotherapy techniques, External radiotherapy devices according to their energies, Sources used in brachytherapy, New methods in radiotherapy /IMRT, stereotactic radiotherapy, gamma knife.
Recommended or Required Reading	:	Radiation Therapy Physics, W. R. Hendee, G. S. Ibbott, E. G. Hendee, Wiley-Liss; 3 edition, 2004 The Physics of Radiation Therapy; F. M. Khan, Lippincott Williams & Wilkins; 3rd edition, 2003 B H Brown, et. al., Medical Physics and Biomedical Engineering, IOP Publishing Ltd, 1999
Planned Learning Activities and Teaching Methods	:	Lecture, Discussion, Report Preparation and/or Presentation.
Recommended Optional Programme Components	:	--
Instructors	:	Prof. Dr. Emine Dilara Atalay
Instructor's Assistants	:	--
Presentation Of Course	:	Face to face

Course Outcomes

Upon the completion of this course a student :

1 Biology of cancer.

2 The role of physist in radiotheraph team and importance of team work.

3 Basic techniques of radiotheraphy.

4 Instruments, planing of theraphy, simulation, immobilization, dose calculation, isodose curves.

5 Informed on new methods in radiotherapy.

Preconditions

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Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods
1.Week	*Basic biology of cancer, mutagens and their mechanisms and effects				
2.Week	*Classification of tumors				
3.Week	*Radiobiology				
4.Week	*Basic radiation physics, radiation units				
5.Week	*The aim in radiotherapy, Radiotherapy team and the role of the physicist in the team				
6.Week	*Target volume and volume of radiotherapy concepts				
7.Week	*The purpose of the simulation tools, and simulators immobilization, treatment planning systems				
8.Week	*Fractionation, izodoz curves and calculating				
9.Week	*Bolus, compensators intended uses				
10.Week	*Treatment areas in radiotherapy				
11.Week	*Types of treatment used in radiotherapy				
12.Week	*Eksternel and internel radiotherapy techniques, According to Energy ekstrenal radiotherapy devices				
13.Week	*Radioactive sources used in brachitheraphy				
14.Week	*New methods in radiotherapy / IMRT, sterotaktik radiotherapy, gamma knife				

Assesment Methods %

2 Ödev : 10.000

3 Presentation/Seminar : 40.000

4 Final : 50.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Ödev	4	3.00	12.00
Final	1	3.00	3.00
Individual study before lecture	4	5.00	20.00
Preparation for final	14	2.00	28.00
Class Hours (14 weeks)	14	4.00	56.00
Further Study	14	3.00	42.00
Preliminary Study	14	3.00	42.00
Presentation/Seminar	4	2.00	8.00
		Total :	211.00
		Sum of Workload / 30 (Hour) :	7
		ECTS :	7.00

Program And OutcomeRelation

	P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14	P.O. 15	P.O. 16	P.O. 17	P.O. 18	P.O. 19	P.O. 20	P.O. 21	P.O. 22	P.O. 23	P.O. 24
L.O. 1	4	3	3	4	2	4	4	3	3	3	3	3	4	3	3	3	3	3	4	4	3	3	3	2
L.O. 2	3	3	4	3	3	3	4	4	3	4	5	4	2	3	2	2	4	3	3	2	4	2	4	2
L.O. 3	5	4	3	3	4	5	3	3	4	3	4	2	2	3	4	3	3	3	3	2	2	3	2	3
L.O. 4	4	5	4	3	3	4	3	4	3	4	3	4	3	3	3	4	3	4	4	3	3	4	4	2
L.O. 5	4	4	3	2	3	4	4	4	3	4	4	3	3	3	3	2	4	4	4	3	4	2	3	3

Ders/Program Çıktıları İlişkisi

P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14	P.O. 15	P.O. 16	P.O. 17	P.O. 18	P.O. 19	P.O. 20	P.O. 21	P.O. 22	P.O. 23	P.O. 24	P.O. 2
3	3	3	3	4	3	3	4	3	3	3	4	3	4	3	3	3	4	4	4	4	4	3	3	3