

Fizik Bölümü / PHYSICS /						
Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
FZK-4039	Radiation and Radiation Protection	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	: The aim of the course is to explain the types of radiation and the usage areas of radiation; To give information about the biological effects of radiation, the principles of radiation protection and the disposal of radioactive wastes.					
Course Contents	: Definition and types of radiation, Radiation dose units, Natural and artificial radiation sources, Use of radiation in different areas, Biological effects of radiation, Effects of acute and chronic radiation exposure, Radiation protection principles, Radioactive contamination and decontamination, Transport and waste disposal of radioactive materials, Legal regulations on radiation protection.					
Recommended or Required Reading	: Shapiro J., Radiation Protection: A Guide for Scientists, Regulators, and Physicians, Harward University Press, Fourth Edition, June 2002. James E. Martin, Physics for Radiation Protection, Wiley-Interscience; ISBN: 0471353736; 1 edition (May 12, 2000) Cember Herman, Introduction to Health Physics, McGraw-Hill, New York, 1996. Turner J., Atoms, Radiation and Radiation Protection, Wiley Interscience, 1995 Hallenbeck William H., Radiation Protection, Lewis Publishers, Inc.; ISBN: 0873719964; 1st edition (April 19, 1994) Lester A., Jr. Slaback, Brian Birky, Bernard. Shleien, Handbook of Health Physics and Radiological Health, Lippincott, Williams & Wilkins; ISBN: 0683183346; 3rd edition (January 1998) Bevelacqua J. J., Contemporary Health Physics, John Wiley & Sons, 1995. Bevelacqua J. J., Basic Health Physics: Problems and Solutions, Wiley-Interscience; ISBN: 0471297119; 1 edition (January 15, 1999) Intl Atomic Energy Agency, Calibration of Radiation Protection Monitoring Instruments (Safety Report); ISBN: 9201001002; (January 2000) Moe and Vallario, Operational Health Physics Training, ANL-88-26, 1988. International Atomic Energy Agency; Radiation Protection During Operation of Nuclear Power Plants: A Safety Guide, ISBN: 920523088X; (January 1983)					
Planned Learning Activities and Teaching Methods	: Lecture, Discussion, Report Preparation and/or Presentation .					
Recommended Optional Programme Components	: Kumaş A, Kumaş V, Yüce İ, Tabak RS. Radyasyon sağlığı ve güvenliği. Palme Yayıncılık- Akademik kitaplar, 2009. -http://www.taek.gov.tr.					
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 Knows the sources of radiation, types of radiation, its effects on people and food, and measures taken against radiation protection.
2 Knows Radiation Units.
3 Knows the harms of radiation and its biological effects.
4 Learns the ways of protection according to the types of radiation.
5 Knows radiation protection in Ionizing Radiation Rooms such as radiotherapy and nuclear imaging.
6 Knows safety precautions in radiation protection.
7 Knows the duties and responsibilities of radiation workers and the principles of radiation protection of patients and community members.
8 Knows the legislation related to the operation of radiology laboratories.

Preconditions						
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Weekly Contents					
	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods
1.Week	*Basic definitions and types of radiation				
2.Week	*radiation sources				
3.Week	*Radiation dose and dose units				
4.Week	*RADIATION DOSE CALCULATIONS.				
5.Week	*Radiation use in medical applications				
6.Week	*Use of radiation for sterilization				
7.Week	*Radiation use in power plants and consumer products				
8.Week	*Biological effects of radiation				
9.Week	*Acute radiation exposure and chronic effects				
10.Week	*Radiation protection principles				
11.Week	*Radioactive contamination and decontamination processes				
12.Week	*Radioactive materials transport.				
13.Week	*Radioactive waste management				
14.Week	*Legal regulations on radiation protection				

Assesment Methods %	
1 Presentation/Seminar :	40.000
2 Ödev :	10.000
3 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
Preliminary Study	14	3.00	42.00
Further Study	14	3.00	42.00
Presentation/Seminar	4	2.00	8.00
Class Hours (14 weeks)	14	4.00	56.00
			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	2	3	2	4	2	3	2	2	4	3	2	3	3	2	2	3	2	2	3	2	3	3	2	3
L.O. 2	2	1	2	2	3	3	2	3	2	3	2	3	2	2	2	3	3	3	2	3	3	2	3	2
L.O. 3	3	2	3	3	4	3	3	2	3	2	3	2	3	3	3	2	3	2	4	4	2	3	2	3
L.O. 4	4	3	2	2	5	4	4	3	4	3	4	4	2	4	3	2	2	4	1	2	4	2	3	2
L.O. 5	2	4	4	4	2	2	1	4	2	2	2	2	4	1	4	3	3	2	3	4	2	1	1	3
L.O. 6	2	4	3	2	3	4	4	2	3	2	4	4	3	2	2	4	2	3	2	3	3	4	2	3
L.O. 7	2	3	2	4	4	3	2	3	3	3	2	2	2	3	3	2	3	1	4	3	2	2	3	1
L.O. 8	3	2	2	2	3	2	5	2	2	4	3	5	4	2	3	3	2	3	2	2	4	3	4	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
1	2	1	2	3	2	1	2	2	2	2	2	3	2	3	1	2	3	2	3	2	2	3	1	2