Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Radiation And Health Physics	FZ5063		3 + 0	3.0	7.5

Prerequisites	None

Language of Instruction	Turkish
Course Level	Second Cycle
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Assoc. Prof. Dr. Emine Dilara AYDIN
Instructors	Assoc. Prof. Dr. Emine Dilara AYDIN
Assistants	
Course Objectives	Giving information on the nature of radiation and its effects on biological systems.
Course Content	The definition and nature of radiation. Spectral rays and particle structures. Natural and artificial radiation sources. Beams of atoms released. Core-rays. Absorption: Interaction of electromagnetic radiation (photons) with matter. Interaction of charged and uncharged particles with matter. Interaction of charged and uncharged particles with matter. Direct and indirect ionization. Stopping power. Linear Energy Transfer (LET). Radiation dose: Definition and classification. Dose units. Dose calculations. Biological effects of radiation. Biological effects of radiation.
Course Learning Outcomes	1) After completion of this course students will be able to: learn about the environment we live in a natural radiation sources 2) Define ionizing radiation. 3) Calculate the received dose. 4) Apply the ways of protection from ionizing radiation. 5) Make a comment on the effects of ionizing radiation on biological systems.

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	The definition and nature of radiation. Spectral rays and particle structures.	Lecturing Question-answer Homework	
2. Week	Natural and artificial radiation sources.	Lecturing Question-answer Homework	
3. Week	Beams of atoms released. Core-rays.	Lecturing Question-answer Homework	

Quick Access

Physics (Master)
- Qualification Awarded
- Level of Qualification
- Qualification Requirements and Regulations
- Specific Admission Requirements
- Recognition of Prior Learning
- Profile of the Program
- Program Key Learning Outcomes
- Occupational Profile of Graduates
- Access to Further Studies
- Course Structure & Credits
- Exam Regulations & Assessment & Grading
- Graduation Requirements
- Mode of Study
- Programme Director(or Equivalent)
- Evaluation Questionnaire
- TYYÇ

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- Course Information
- Weekly Course Content
- Resources
- Course Category
- CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
- ECTS credits and course workload

4. Week	Absorption: Interaction of electromagnetic radiation (photons) with matter.	Lecturing Question-answer Homework	
5. Week	Interaction of charged and uncharged particles with matter.	Lecturing Question-answer Homework	
6. Week	Interaction of charged and uncharged particles with matter.	Lecturing Question-answer Homework	
7. Week	Direct and indirect ionization.	Lecturing Question-answer Homework	
8. Week	Mid-term Exam		
9. Week	Stopping power.	Lecturing Question-answer Homework	
10. Week	Linear Energy Transfer (LET).	Lecturing Question-answer Homework	
11. Week	Radiation dose: Definition and classification.	Lecturing Question-answer Homework	
12. Week	Dose units.	Lecturing Question-answer Homework	
13. Week	Dose calculations.	Lecturing Question-answer Homework	
14. Week	Biological effects of radiation.	Lecturing Question-answer Homework	
15. Week	Biological effects of radiation.	Lecturing Question-answer Homework	
16. Week	Final Exam		

RESOURCES

Recommended Sources
Introduction to Radiological Physics and Radiation Dosimetry. Frank H. Attix. John Wiley and Sons, Inc., 1986.
Atoms, Radiation, and Radiation Protection. James E. Turner. John Wiley and Sons, Inc., 1995.
Introduction to Health Physics. Herman Cember. The McGraw Hill, Inc., 1997.
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).

ASSESSMENT

Measurement and Evaluation Methods and Techniques
Mid-term Exam, Attendance, Problem Solving, Quiz, Final Exam

COURSE CATEGORY

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4	DK5
PY1	3	4	4	3	3	0

PY2	3	4	3	3	3	0
PY3	4	3	4	4	4	0
PY4	4	4	4	4	3	0
PY5	3	3	3	3	3	0
PY6	4	4	4	3	4	0
PY7	4	3	4	4	4	0
PY8	3	3	3	3	3	0
PY9	3	3	3	4	3	0
PY10	2	3	2	2	3	0
PY11	3	3	2	3	2	0
PY12	3	4	4	3	3	0
PY13	3	3	4	3	3	0
PY14	4	3	3	4	4	0
PY15	4	4	3	4	4	0

*DK = Course's Contrubution.

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

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ECTS CREDITS AND COURSE WORKLOAD

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Assignment 1	4	2	8
Final Exam Preparation	1	15	15
Mid Term Exam Preparation	1	15	15
Further Study	14	5	70
Preliminary Study	14	2	28
Quiz 1	4	2	8
Class Hours (14 weeks)	14	3	42
Mid Term Exam 1	1	3	3
Final Exam	1	3	3
		Total Workload	192
		Total Workload / 25.5 (s)	7.53
		ECTS Credit of the Course	8