Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Radiation Measurement Methods	FZK454	8. Semester	2 + 2	3.0	8.0

Prerequisites	None

Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First 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	The aim of course is to teach the basic principles of radiation detection and measurement.
Course Content	Introduction to radiation measurements, Statistical error of radiation counting, Review of atomic and nuclear physics, Review of atomic and nuclear physics, Energy loss and penetration of radiation through matter, Energy loss and penetration of radiation through matter , Gas-filled detectors, Scintillation detectors, Semiconductors detectors, Relative and absolute measurements, Electronics, Data analysis methods, Neutron detection, Health physics Fundamentals,
Course Learning Outcomes	1) To comprehend the properties of ionizing radiation. 2) To comprehend the interactions of charged paticulate and uncharged radiations with matter. 3) To determine the detection techniques for ionizing radiation. 4) To evaluate the statistical analysis of the results of nuclear counting experiments. 5) To select the correct systems for detection of radiation. 6) To comprehend the sources of background and the properties of shielding materials 7) To evaluate the purpose of detector shielding and the background in gamma-ray spectra 8) To interpret the statistical analysis of the results of nuclear counting experiments

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to radiation measurements	Oral lecture, questions-answers, homework	
2. Week	Statistical error of radiation counting	Oral lecture,	

Quick Access

Physics
- 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

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

		questions-answers, homework	
3. Week	Review of atomic and nuclear physics	Oral lecture, questions-answers, homework	
4. Week	Review of atomic and nuclear physics	Oral lecture, questions-answers, homework	
5. Week	Energy loss and penetration of radiation through matter	Oral lecture, questions-answers, homework	
6. Week	Energy loss and penetration of radiation through matter	Oral lecture, questions-answers, homework	
7. Week	Gas-filled detectors	Oral lecture, questions-answers, homework	
8. Week	Mid-term Exam		
9. Week	Scintillation detectors	Oral lecture, questions-answers, homework	
10. Week	Semiconductors detectors	Oral lecture, questions-answers, homework	
11. Week	Relative and absolute measurements	Oral lecture, questions-answers, homework	
12. Week	Electronics	Oral lecture, questions-answers, homework	
13. Week	Data analysis methods	Oral lecture, questions-answers, homework	
14. Week	Neutron detection	Oral lecture, questions-answers, homework	
15. Week	Health physics Fundamentals	Oral lecture, questions-answers, homework	
16. Week	Final Exam		

RESOURCES

Recommended Sources
Measurement and detection of radiation; Nicholas Tsoulfanidis, Taylor&Francis, Second Edition, 1983.
Radiation Detection and Measurement; Glenn F. Knoll, Wiley; 3 edition, 2000
Radiation Dosimetry: Instrumentation and Methods, Second Edition; Gad Shani, CRC Press; 2000

ASSESSMENT

Measurement and Evaluation Methods and Techniques		
Mid-term Exam, Attendance, Problem Solving, Quiz, Final Exam		
In-Term Studies	**Quantity**	**Percentage**
Mid Term Exam 1	1	40
Total	1	40
End-Term Studies	**Quantity**	**Percentage**

Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

COURSE CATEGORY

Course Category	Percentage
Core Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4	DK5	DK6	DK7	DK8
PY1	5	4	4	4	5	5	5	5	4
PY2	4	4	4	4	4	5	4	4	5
PY3	1	1	2	2	2	2	1	1	1
PY4	3	3	2	2	3	3	2	2	2
PY5	3	3	3	2	3	2	3	2	3
PY6	3	2	3	3	2	3	3	3	3
PY7	4	3	3	3	4	4	4	4	4
PY8	1	2	1	2	1	2	1	1	2
PY9	4	4	3	4	3	4	4	3	3
PY10	4	3	4	3	4	4	3	3	4
PY11	1	2	1	2	2	2	2	3	3
PY12	1	1	2	2	1	1	1	2	1
PY13	1	1	1	2	1	1	2	2	2
PY14	1	2	1	2	1	1	2	1	1
PY15	3	3	2	3	2	3	2	3	3

*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)
Class Hours (14 weeks)	14	4	56
Final Exam Preparation	1	15	15
Mid Term Exam Preparation	1	15	15
Further Study	14	5	70
Quiz 1	4	2	8
Assignment 1	4	2	8
Preliminary Study	14	2	28

Mid Term Exam 1	1	2	2
Final Exam	1	2	2
		Total Workload	204
		Total Workload / 25.5 (s)	8.00
		ECTS Credit of the Course	8