COURSE INFORMATON					
Course Title	*Code*	*Semester*	*L+P Hour*	*Credits*	*ECTS*
RADIATION DETECTION AND MEASUREMENT	PHYS 544	1	3 + 0	3	10

Prerequisites	

Language of Instruction	English
Course Level	Postgraduate
Course Type	Elective
Course Coordinator	
Instructors	Prof.Dr. Necdet Aslan, Prof.Dr. Rabia Ince, Assoc.Prof Ş.İpek Karaaslan
Assistants	
Goals	To make the posgraduate students have a good understanding on the basic concepts of radiation detection.
Content	Types of radiation, radiation statistics, fundamentals of detection, ionization chambers, proportional counters, GM counters, Scintillation detectors, Photomultiplier tubes, semiconductor detectors, neutron detectors, multi channel analyser, detector shielding

Learning Outcomes	**Teaching Methods**	**Assessment Methods**
1- Knows radiation and radiation interaction with matter	1, 5, 15	A, B, C
2-Able to use radiation detectors	1, 5, 15	A, B, C
3-Able to choose correct detection system	1, 5, 15	A, B, C

Teaching Methods:	1: Lecture, 5: Problem solving, 15: Homework
Assessment Methods:	A: Exam, B: Final, C: Homework

COURSE CONTENT

Week	Topics	Study Materials
1	Sources of radiation and radiation interaction with matter	
2	Counting statistics	
3	General properties of detectors	
4	Ionization chambers	
5	Proportional counters	
6	GM counters	
7	Fundamentals of scintillation detectors	
8	Photomultiplier tubes and spectroscopy with scintillation detectors	
9	Semiconductor detectors	
10	Germanium detectors	
11	Neutron detectors	
12	Pulse processing	
13	Multichannel anayzer	
14	Shielding	

RECOMMENDED SOURCES	
Textbook	Knoll G.F., "Radiation Detection and Measurement", Wiley, 2010
Additional Resources	

MATERIAL SHARING	
Documents	
Assignments	2
Exams	2 midterms, 1 final

ASSESSMENT

IN-TERM STUDIES	NUMBER	PERCENTAGE
Assignment	2	20
Midterms	2	40
Total		60
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		40
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		60
Total		**100**

COURSE CATEGORY	Expertise/Field Courses

COURSE'S CONTRIBUTION TO PROGRAM							
No	Program Learning Outcomes	Contribution					
		1	2	3	4	5	
1	gains the ability to apply the knowledge in physics and mathematics					X	
2	gains the ability to construct an experimental setup, perform the experiment, analyze and interpret the results		X				
3	is supposed to have the education required for the measurements in scientific and technological areas			**X**			
4	is able to work in an interdisciplinary team					**X**	
5	is able to identify, formulate and solve physics problems					X	
6	is conscious for the professional and ethical responsibility					**X**	
7	is able to communicate actively and effectively					X	
8	is supposed to have the required education for the industrial applications and the social contributions of physics			**X**			
9	is conscious about the necessity of lifelong education and can implement it			**X**			
10	is supposed to be aware of the current investigations and developments in the field				X		
11	can make use of the techniques and the modern equipment required for physical applications				X		

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Including the exam week: 14x Total course hours)	14	3	42
Hours for off-the-classroom study (Pre-study, practice)	14	12	168
Midterms	2	3	6
Assignment	2	10	20
Final examination	1	3	3
Total Work Load			239
Total Work Load / 25 (h)			9,59
ECTS Credit of the Course			10