

Course Name/Kode: ILT 540 Radiation Detection Systems					ADVANCED TECHNOLOGIES				
Semester	Teaching and Learning Methods							Credit	
	Theory	App.	Lab.	Project	Homework	Other	Total	Credit	ECTS Credit
1-2	42				100	46	188	3	7.5
Language	Turkish								
Compulsory/ Elective	Elective								
Prerequisites	None								
Course Content	Fundamentals of radiation physics. Interactions of radiation with matters. Radiation units. Radiation Detectors (ionization chambers, proportional counters, Geiger Mueller detectors, inorganic and organic scintillation detectors, semiconductor detectors, strip detectors). General properties of radiation detectors. Electronics of detectors. Signal processing and data analysis. Application of particle detectors..								
Course Objectives	<p>The objectives of course shall be to enable students to:</p> <ul style="list-style-type: none"> • to teach the interactions of radiation with matters, which are used in many areas of nuclear research like medicine, industry, agriculture and archeology, • to learn out the types of detectors used to detect radiation, • to find out their properties, application areas and design, • to learn the necessary information about radiation measurements 								
Learning outcomes and competences	<ul style="list-style-type: none"> • Ability to inform people who work in areas of radiation • Ability to present oral and written forms in her/his field • Ability to rapidly distinguish the true and required knowledge, • Ability to do analyze of results • Ability to work at TAEK, TUBITAK-UME, and research groups, universities, research centers in advanced level, people who specialize in these subjects. 								
Textbook and /or References	<ol style="list-style-type: none"> 1. Physics&Engineering of Radiation dedection Syed Naeem Ahmed, Queen's University, Kingston, Ontario (2007). 2. Radiation dedection and Measurement, Gnell F. Knoll (2000) 3. Particle dedectors, Claus Grupen and Boris Shwartz (2008) 								
Assessment Criteria								<i>If any, mark as (X)</i>	Percentage (%)
	Midterm Exams							X	30
	Quizzes								
	Homeworks							X	
	Projects								
	Term paper							X	20
	Laboratory Work								
	Other								10
	Final Exam							X	40
Prepared by	Doç. Dr. Sema Bilge Ocak								
Week	Subject								
1	Radiation, radiation sources and properties of radiation, ionization and non-ionization radiations, radiation units.								
2	Interactions of radiation with matters, the minimum and maximum energy transfer, mean ionization.								
3	General properties of radiation detectors								
4	Ionization chambers								
5	Geiger Mueller detectors								

6	Inorganic and organic scintillation detectors
7	Midterm Exam
8	Photodetectors
9	Semiconductor detectors
10	Other solid-state detectors
11	Puls processing and data analysis
12	Linear and logic puls functions
13	Electronics of detectors
14	Application of particle detectors