

GAZI UNIVERSITY GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCE ECTS FORM								
Course Code and Title	ILT 543 Advanced Neutron and Reactor Physics							
Credits	3							
ECTS								
Name of Lecturer And e-mail address	Assoc.Dr.Sema Bilge Ocak							
Department/Program	Advanced Technologies							
Course Type								
Course Language	Turkish							
Course Semester								
Prerequisites	There is no prerequisite for this course.							
Course Objectives								
Course Contents	Fundamentals of The Nuclear Physics, Fundamentals of Neutron Physics, Slowing Neutrons, The Properties of Thermal Neutrons, Division of Nucleus (Fission), The Physical Properties of The Nuclear Reactors, Criticality in Homogenous Reactors, Reactor Calculations with One Group, Heterogenous Reactors, Infinite Rise Coefficient, Minimal Critical Dimension, Reactor Control, The Structure of Nuclear Reactors.							
Course Learning Outcomes	<ul style="list-style-type: none"> • Ability to work Nuclear Power Plant and facilities produced neutron (cyclotron type accelerators / research reactors) • To be able to tell the basics of the nuclear reactors. • Order nuclear reactor types and the working principles of nuclear reactor • Tell the basics concepts and knowledges about the nuclear reactors • Ability to present oral and written forms in her/his field • Ability to rapidly distinguish the true an 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. 							
References (References must be up to date)	Books	1.Reactor Physics, P. F. Zweifel, 1973 2.Nuclear Power Technology, W. Marshall. 1985 3.Nuclear Reactor Analysis J. J. Duderstadt, L. J. Hamilton, 1976. 4.Nuclear Reactor Engineering, S. Galsstone, A. Sesonske,1967.						
	Journals, Articles, Papers, Symposiums							
Planned learning activities and teaching methods	Theoric	Practice	Lab.	Projects	Assign.	Other	Total	ECTS
Assessment Methods and Criteria	Quantity (mark with "X")					Percentage (%)		
Midterm Exam	X					30		
Quiz								
Assignment	X					20		
Projects								

Laboratory		
Practice		
Other	X	10
Final Exam	X	40
WEEKLY COURSE PLAN		
Week	Contents and topics	
1. Week	Fundamentals of Neutron Physics, Fundamentals of Reactor Physics	
2. Week	Slowing the Neutrons. Properties of the Thermal Neutrons.	
3. Week	Division of The Nucleus (Fission)	
4. Week	The Physical Properties of The Nuclear Reactors	
5. Week	Homogenous Reactors	
6. Week	Heterogenous Reactors,	
7. Week	MIDTERM EXAM	
8. Week	Infinite Rise Coefficient, Minimal Critical Dimension,	
9. Week	Reactor Control	
10. Week	The Structure of Nuclear Reactors.	
11. Week	Power reactors and reactor materials,	
12. Week	Reactor heat generation, reactor shielding and safety	
13. Week	Fuel cycle of nuclear reactors	
14. Week	Characteristic quantities of Fuel cycle, types of fuel cycle operations of fuel cycle, of radioactive waste management	
15. Week	FINAL EXAM	