

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
FZK-4005	Neutron Physics	3.00	0.00	0.00	3.00	6.00
Course Detail						
<b>Course Language</b>	: Turkish					
<b>Qualification Degree</b>	: Bachelor					
<b>Course Type</b>	: Optional					
<b>Preconditions</b>	: Not					
<b>Objectives of the Course</b>	: Aim of the course is to give information about neutron interactions and the solution methods of the neutron transport equation.					
<b>Course Contents</b>	: Physical properties of neutron, Cross section and Mean Free Path, Elastic Collision, (n,p) Collision, Inelastic Collision, Absorption of the neutron, Fission, Emergence of Charged Particles, Neutron Sources, Detection of Neutrons, Neutron Activation Method, Neutron Transport Theory, Neutron Transport Theory, Solution Methods of Neutron Transport Theory, Solution Methods of Neutron Transport Theory, One-Speed Diffusion Equation, Solution of the Diffusion Equation, Solution of the Diffusion Equation.					
<b>Recommended or Required Reading</b>	: An introduction to neutron physics. L. F. Curtiss, 1959 Neutron physics, K. H. Beckurts, 1964 Neutron Fizigi , Bahriye Yaramis 1974					
<b>Planned Learning Activities and Teaching Methods</b>	: Oral lecture, questions-answers, homework.					
<b>Recommended Optional Programme Components</b>	: --					
<b>Instructors</b>	: Prof. Dr. Emine Dilara Atalay					
<b>Instructor's Assistants</b>	: --					
<b>Presentation Of Course</b>	: Face to face / Online					

## Course Outcomes

## Upon the completion of this course a student :

- 1 After completion of this course students will be able to: have information about the neutron physical properties and the interaction of neutron with matter.
- 2 Make a comment on the methods of identification and solution of neutron transport equation.
- 3 Develop analytical solutions for the problems related to the subject and computer usage.
- 4 Learn applications of concepts that are discussed in theory to technology.
- 5 Create a problem and solution-oriented development in the relevant field of learning materials.

## Preconditions

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
-------------	-------------	----------	----------	------------	---------	------

## Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods
1.Week	*Physical properties of neutron				*Oral lecture, questions-answers, homework
2.Week	*Cross section and Mean Free Path				
3.Week	*Elastic Collision, (n,p) Collision, Inelastic Collision				
4.Week	*Absorption of the neutron, Fission, Emergence of Charged Particles				
5.Week	*Neutron Sources				
6.Week	*Detection of Neutrons				
7.Week	*Neutron Activation Method				
8.Week	*Neutron Transport Theory				
9.Week	*Neutron Transport Theory				
10.Week	*Solution Methods of Neutron Transport Theory				
11.Week	*Solution Methods of Neutron Transport Theory				
12.Week	*One-Speed Diffusion Equation				
13.Week	*Solution of the Diffusion Equation				
14.Week	*Solution of the Diffusion Equation				

## Assesment Methods %

- 1 Final : 60.000
- 2 Ödev : 10.000
- 3 Vize : 30.000

## ECTS Workload

