Fizik Bölümü / PHYSICS /													
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													
Course Language	: Turkish												
Qualification Degree	: Bachelor												
Course Type	: Optional												
Preconditions	: Not												
Objectives of the Course	: Aim of the course is to give information about neutron interactions and	: Aim of the course is to give information about neutron interactions and the solution methods of the neutron transport equation.											
Course Contents	Emergence of Charged Particles, Neutron Sources, Detection of Neu	: 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, One-Speed Diffusion Equation, Solution of the Diffusion Equation.											
Recommended or Required Reading	d : An introduction to neutron physics. L. F. Curtiss, 1959 Neutron physics	s, K. H. Beckurts, 1964 Neutro	on Fizigi , Bah	riye Yaramis 197	'4								
Planned Learning Activities Teaching Methods	s and : Oral lecture, questions-answers, homework.												
Recommended Optional Programme Components	:												
Instructors	: Prof. Dr. Emine Dilara Atalay												
Instructor's Assistants	:												
Presentation Of Course	: 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.

 $3\,\mbox{Develop}$ 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 C	ontents				
	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				

ssesment Methods %	
Final: 60.000	
Ödev: 10.000	
Vize: 30.000	

Activities	Count	Time(Hour)	Sum of Workload
Vize	1	3.00	3.00
Ödev	4	3.00	12.00
Final	1	3.00	3.00
Individual study before lecture	14	2.00	28.00
Preparation for final	1	14.00	14.00
Preparation for midterm	7	2.00	14.00
Class Hours (14 weeks)	14	3.00	42.00
Further Study	14	2.00	28.00
Preliminary Study	14	1.00	14.00
Application/Practice	14	2.00	28.00
		Total	: 186.00
		Sum of Workload / 30 (Hour)	: 6

ECTS · 6 (

ECTS: 6.00

Progr	Program And OutcomeRelation																							
	P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	2 P.O. 13	P.O. 14	P.O. 15	P.O. 16	P.O. 17	P.O. 18	P.O. 19	P.O. 20	P.O. 21	P.O. 22	P.O. 23	P.O. 24
L.O. 1	4	4	3	3	4	3	4	3	2	3	3	3	4	3	3	3	3	3	3	3	2	3	2	3
L.O. 2	4	3	4	4	4	4	3	4	3	4	3	4	3	3	3	4	3	4	4	3	2	3	4	4
L.O. 3	3	3	3	3	3	3	4	3	3	2	4	3	3	2	3	3	2	3	3	3	2	3	3	3
L.O. 4	3	4	3	4	3	4	3	3	3	2	4	3	3	3	4	2	4	3	3	2	2	3	3	3
L.O. 5	4	3	3	4	3	3	3	4	3	3	3	3	3	3	3	3	3	3	3	4	2	3	2	4
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D	Ders/Program Çıktıları İlişkisi																									
Ρ.	0. 1	P.O. 2	P.O	. 3 P	.0. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14	P.O. 15	P.O. 16	P.O. 17	P.O. 18	P.O. 19	P.O. 20	P.O. 21	P.O. 22	P.O. 23	P.O. 24	P.O. 2
	3	2	3		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
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