

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
FZK-4007	Particle Physics I	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	: To understand and analyze the laws of nature					
Course Contents	: Basic information is given to physics students about elementary particles and modern physics. Related topics are discussed and linked to their professional knowledge.					
Recommended or Required Reading	: David Griffiths, Introduction to Elementary Particles, WILEY-VCH Verlag, 2008.					
Planned Learning Activities and Teaching Methods	: Oral lectures with interactive discussions, homeworks, applications and practice.					
Recommended Optional Programme Components	: -					
Course Instructors	: Dr. Öğr. Üyesi Oktay Yılmaz					
Instructor's Assistants	: -					
Presentation Of Course	: Face to face					

Course Outcomes

Upon the completion of this course a student :

- 1 To know the fundamental particles and their properties
- 2 To solve and discuss the relativistic Dirac equation
- 3 To learn Feynman diagram technique.
- 4 To learn particle reaction process and calculations.

Preconditions

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Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods
1.Week	*introduction to particle physics				
2.Week	*Accelerators				
3.Week	*Particle dynamics and Fundamental Forces				
4.Week	*Theory of Relativity and Lorentz Transformations				
5.Week	*Theory of Relativity and Lorentz Transformations				
6.Week	*Symmetry and Noether Theorem				
7.Week	*Symmetry and Noether Theorem				
8.Week	*Bound States, Lamb Shift, Fine Structure, Magnetic Moments				
9.Week	*Bound States, Lamb Shift, Fine Structure, Magnetic Moments				
10.Week	*Feynman Rules, Cross Sections and Golden Rule				
11.Week	*Feynman Rules, Cross Sections and Golden Rule				
12.Week	*Dirac Equation and Feynman Rules for QED				
13.Week	*Dirac Equation and Feynman Rules for QED				
14.Week	*Some Reactions and Their Amplitude Calculations				

Assesment Methods %

- 1 Final : 60.000
- 2 Mzæ : 40.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Vize	1	3.00	3.00
Final	1	3.00	3.00
Preparation for midterm	7	3.00	21.00
Preparation for final	7	3.00	21.00
Homework	14	3.00	42.00
Make-up	1	3.00	3.00
Theoretical Lecturing	14	3.00	42.00
Problem Çözme	14	2.00	28.00
Application/Practice	14	1.00	14.00
Preliminary Study	14	1.00	14.00
			Total : 191.00
			Sum of Workload / 30 (Hour) : 6
			ECTS : 6.00

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	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	3	2	2	2	1	2	4	1	2	2	3	3	3	2	3	5	5	3	5	3	3	2	3	3
L.O. 2	2	2	3	4	2	3	2	2	3	0	3	3	2	3	3	3	4	4	3	3	4	3	3	4
L.O. 3	4	3	4	4	3	4	3	3	2	4	2	3	3	3	3	3	2	3	3	5	2	4	3	2
L.O. 4	4	3	4	5	3	3	3	2	3	3	3	4	3	4	4	4	4	3	4	4	3	3	3	5

Ders/Program Çıktıları İlişkisi																								
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	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	4	2	4	1	3	4	3	4	5	1	4	2	2	2	4	5	2	3	3	2	3	4	2	3