

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
FZK-4012	Fundamental High Energy 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	: To understand and analyze the laws of nature					
Course Contents	: Basic information is given to physics students about elementary particles and high energy physics. Related topics are discussed and linked to their professional knowledge.					
Recommended or Required Reading	: 1) David Griffiths, Introduction to Elementary Particles, WILEY-VCH Verlag, 2008.2) Gordon Kane, Modern Elementary Particle Physics, Addison-Wesley Publishing Company. 1993.					
Planned Learning Activities and Teaching Methods	: Oral lectures with interactive discussions, homeworks, applications and practice.					
Recommended Optional Programme Components	: -					
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 understand of CPT theorem
- 4 To learn Feynman diagram technique
- 5 To learn particle reaction process and calculations

Preconditions

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

Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods
1.Week	*Lagrangians in Particle Physics				
2.Week	*Gauge Invariance				
3.Week	*Non-Abelian Gauge Theories				
4.Week	*Dirac Notation for Spin				
5.Week	*Standart Model Lagrangian				
6.Week	*Electroweak theory				
7.Week	*Quantum Chromodynamics *Higgs Mechanism				
8.Week	*Cross Sections, Decay Widths, Lifetimes				
9.Week	*Production of W and Z				
10.Week	*müon Decay				
11.Week	*Accelerators				
12.Week	*Experiments and Detectors				
13.Week	*Quarks and Confinement				
14.Week	*Inelastic Scattering and Structure Functions				

Assesment Methods %

2 Vize : 40.000

3 Final : 60.000

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

Activities	Count	Time(Hour)	Sum of Workload
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	1	5	5	2	2	2	1	1	1	2	3	3	1	3	4	5	2	3	2	1	5	2	2
L.O. 2	4	2	3	3	1	2	3	2	2	2	3	2	4	4	3	2	2	3	3	3	2	2	0	2
L.O. 3	2	4	2	2	2	3	3	3	3	3	4	3	2	3	4	3	2	2	2	2	3	0	2	5
L.O. 4	4	4	3	2	3	4	4	3	3	2	4	1	3	3	2	2	3	2	4	3	3	0	3	3
L.O. 5	5	5	4	3	4	3	4	4	4	3	3	4	2	2	5	3	3	4	3	3	4	3	3	4

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
4	4	5	4	5	3	2	4	3	3	4	5	2	3	3	1	4	2	4	4	4	2	2	0	4