Code and Name:	**FIZ5290 ADVANCED PARTICLE PHYSICS**
Unit:	Graduate School of Natural and Applied Sciences
Detail:	**Period:** 2023-2024 **Status:** Optional **Class:** 1 **Credits:** 3-0-0-3 **ECTS:** 6 **Language:** Turkish

INSTRUCTOR	
Title, Name and Surname:	
Phone:	
Email:	
Social Account:	
Student Day and Time:	

COURSE ASSISTANT	
Title, Name and Surname:	.....
Phone:	.....
Email:	.....
Social Account:	.....
Student Day and Time:	.....

Lessons Weekly Program:	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			-			

Rendering:	Face-to-face lessons per week 3 It will be done on an hourly basis.
Place:	**YY:** - **UE:** -

Purpose:	To learn the properties of elementary particles and elementary particle dynamics. Quantum electrodynamics, quantum chromodynamics, and weak To understand the basic concepts, methods and laws of interactions. Perform calculations using Feynman diagrams. To learn about particle physics experiments.
Material:	D. Griffiths, Introduction to Elementary Particle Physics , Wiley 1987
Student Responsibility :	Attending classes, submitting assignments on time, and participating in exams.

Weekly Lesson Plan

Week	Topic	Method
1	History of Particle Physics and the Natural System of Units	YY
2	Elementary Particles and Their Properties	YY
3	Elementary Particle Interactions: Fundamental forces; quantum electrodynamics; Quantum color dynamics	YY
4	Elementary Particle Interactions: Weak and electromagnetic interactions	YY
5	Elementary Particle Interactions: Decays; Conservation laws	YY
6	Relative Mechanics: Lorentz Dönüşümleri; Dört vektörler; Enerji ve momentum	YY
7	Relative Mechanics: Collisions; Classic Collisions; Relative Collisions	YY
8	Symmetries : Symmetries; Groups; Angular Momentum; Load conjugate	YY
9	Symmetries: Spin; Parity; Load parity; Flavor Symmetries; Discrete Symmetries	YY
10	Connected Statuses	YY
11	Feynman Calculation Technique: Decay and scattering; Decay ratios, cross-sectional area of impact; The Golden Rule	YY
12	Feynman Calculation Technique: Feynman Diagrams and Rules	YY
13	Experimental methods in particle physics : Particle physics experiments	YY
14	Experimental methods in particle physics : Accelerators; Detectors	YY

Assessment and Evaluation

	Method		Number	Weight
Break Exam	Exam	Face	1	% 50
	Quiz	-	-	
	Homework	-		
	Project	-	-	-
General Exam	Face		1	% 50

Course Outcomes:

1	Gain knowledge about particle physics.
2	Understands the basic concepts of particle physics, calculates and interprets the interactions between particles.
3	Understands and interprets the standard model and other elementary particle approaches.
4	Understands particle physics research in the literature.
5	Can analyze, synthesize and evaluate ideas about new particle structures and formations and reach original results.

Course-Specific Explanations:

UE: Distance Education; **YY:** Face-to-Face Education

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