Course Information								
Course Code	**T**	**P**	**L**	**C**	**ECTS**	**Type** C/E	**Language** TR/ENG etc.	**Year/Semester**
FİZ3022	**2**	**0**	**0**	**2**	**3**	**C**	**TR**	**3/SPRING**
Course Name (Turkish**)**	**Temel Parçacıklar Fiziği**							
Course Name (English**)**	**Elementary Particle Physics**							

Unit/Program	Physics Department/Undergraduate Program
Course Prerequisite	No
Course Objectives	To teach students the main concepts, experimental techniques and theoretical framework of elementary particle physics, and to enable students to gain knowledge in this field.
Course Outline	Fundamental concepts of particle physics, particle interactions, accelerators and particle physics experiments.
Textbook/ Material / Resources	Elementary Particle Physics by David Griffiths.
Internship Status	No

Course Precedents

University Name	**Program Name**	**Course Name**	**T-P-L-C; ECTS**	**Type**

The instructor who proposed the course (Title, Name and Surname)	*Signature*
Instructors who can teach the course (Title, Name and Surname)	*Signature*

Academic justification for the opening of the course? (The effect of course outcomes on program outcomes, etc.)

Brief explanation of the course (theoretical lecture, applications, laboratory, studio, off-campus activity, using software, etc.)

Face-to-face courses will be taught under the supervision of the relevant faculty member.

External Stakeholder Opinions About the Course (It is expected that the opinions to be obtained from the business world that will employ your graduates or from real or legal persons outside the University who have expertise on the subject of the course will be specified. Proof documents must be attached to this form.)

Stakeholder Name	**Opinion** (It should be given as a summary, it should not exceed two lines.)

Weekly Course Content Distribution		
Week	**Theory**	**Application/Laboratory**
1	Introduction of elementary particles, Historical development Basic concepts and terminology	
2	Collision of Particles, Collision Diagrams, Collision and Interaction, Collision of Particles Sudden Decays	
3	What is the Protection Law? Symmetry and Invariance, Symmetry Breakdown	
4	Experimental Methods in Elementary Particle Physics, Experiments in Stationary Target Accelerators, Fixed Targeted Accelerators	
5	The Beginning of the Quark Model, the Discovery of the Mysterious Quark	
6	Discovery of the Tau lepton, Discovery of the Bottom lepton, Third Generation	
7	Hadron Interaction, Lepton-Proton Scattering Experiments	
8	What is the Origin of Mass Problem, Mass Scales? Composites of Quarks and Leptons	
9	Midterm Exam	
10	Introduction to Accelerators, How and Why Accelerators, Particle Colliders, Superconducting Magnet in Accelerators	
11	Study of the Contents of Particles, Study of Known Forces	
12	Installed and Used Accelerators, Proton Accelerators	
13	Proton and Proton-Antiproton Colliders at CERN, 2 TeV Proton-Antiproton Collider at FERMILAB	
14	Superconducting Supercolliders, Very High Energy Proton-Proton Colliders	
15	Final Exam	
16		

Assessment			
Evaluation Criteria	**Activity**	**Custom**	**Contribution to Success Grade (%)**
	Midterm Exams	1	40
	Quizzes		
	Assignments		
	Projects		
	Term Paper		
	Laboratory		
	Other		
	Final Exam	1	60
		Sum:	100
Remarks			

Content Design and Subject Weight (%)	Mathematics and Basic Sciences	100
	Engineering Sciences	
	Social Sciences	
	Health Sciences	
	Educational Sciences	
	Culture and Art Sciences	
	Design Information	

Workload (ECTS) Calculation			
Events	**Number**	**Duration (Hours)**	**Total workload (Hours)**
Fieldwork			
Midterm Exam Application	1	2	2
Self-Study (including pre-class and exam preparation)	14	2	28
Make-up Exam	1	2	2
Experiment and Observation			
Class Participation (Theory)	14	2	28
Homework			
Final Exam Practice	1	2	2
Laboratory			
Article Review			
Writing an Article			
Reading			
Case Study			
Performance			
Problem Solution			
Project Preparation			
Project Submission			
Quiz			
Report Preparation			
Submitting Reports			
Role/Drama Work			
Seminar			
Oral Exam			
Team/Group Work			
Argument	13	1	13
Application/Practice			
Other			
TOTAL WORKLOAD:			**75**
ECTS CREDİTS OF THE COURSE: *(The number obtained as a result of Total Workload/25 is calculated by rounding to the whole number.)*			**3**

	Program Outcomes (PO) / **Learning Outcomes (LO)** *(Course Outcomes)*	1	2	3	4	5	6	7	8	9	10	11
1	Learn the properties of elementary particles and elementary particle dynamics	**5**	**4**	**4**	**4**	**5**	**4**	**5**	**5**	**4**	**2**	**2**
2	Quantum electrodynamics, quantum chromodynamics, and weak Understands the basic concepts, methods and laws of the theory of interactions	**5**	**4**	**4**	**4**	**5**	**4**	**5**	**5**	**4**	**2**	**2**
3	Gain knowledge about experimental methods, accelerators and detectors in particle physics	**5**	**4**	**4**	**4**	**5**	**4**	**5**	**5**	**4**	**2**	**2**

Organizer: Assoc. Prof. Dr. Serpil YALÇIN KUZU
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