ELEMENTARY PARTICLE PHYSICS

1	Course Title:	ELEMENTARY PARTICLE PHYSICS
2	Course Code:	FZK3403
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	3
6	Semester:	5
7	ECTS Credits Allocated:	5.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	There is no course prerequisite
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. EMIN N. ÖZMUTLU
15	Course Lecturers:	Yrd. Doç. Dr. Nilgün DEMİR
16	Contact information of the Course Coordinator:	Prof. Dr. Emin N. ÖZMUTLU E-mail: ozmutlu@uludag.edu.tr İş Tel:(0224)2941693 Adres: UÜ Fen Edebiyat Fakültesi, Fizik Bölümü, 16059 Görükle Kampusü, Bursa
17	Website:	
18	Objective of the Course:	The aim of this course to teach the basic concepts and the terminology of the particle physics, avoiding mathematical details as much as possible to undergraduate physics students.
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	
	1	Learns the history of elementary particles physics.
	2	Learns the terminology of elementary particles physics.
	3	Learns what does the quantum numbers mean.
	4	Understand the different way of particles classification.
	5	Learns the strangeness quantum number.
	6	Understand the isospin concept.
	7	Learns what is lepton.
	8	Learns what is quark.
	9	Understand the mechanism of basic interactions.
	10	Learns the current status of elementary particles physiscs.
21	Course Content:	

Course Content:

Week	Theoretical	Practice
1	Historical background, particle labelling; quantum numbers.	
2	Early particle detectors, basic interaction.	
3	Yukawa hipothesis	
4	Strange particles, resonance particles.	

5	Fermions and bosons, leptons and quarks, particles and antiparticles.	
6	Isospin, eightfold way, new quantum numbers.	
7	Ultimate building blocks of matter; leptons and quarks.	
8	Basic interactions and fields, Feynman diyagrams.	
9	Midterm exam+repeating courses	
10	Electromagnetic, weak and electroweak interactions.	
11	Strong and gravitational interactions.	
12	Invariance principles and conservation laws.	
13	Standard model and Higgs mechanism.	
14	Current status and future of particle physics.	

22	Textbooks, References and/or Other Materials:	1.E.N. Özmutlu (2012),"Unpublished Lectures Notes". 2.D.H. Perkins (1985), "Introduction to High Energy Physics", Cambridge University Pres.
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	40.00
Final Exam	1	60.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00

Measurement and Evaluation Techniques Used in the Course			
Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preparation	14	5.00	70.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	2.00	2.00
Others	14	2.00	28.00
Final Exams	1	2.00	2.00
Total Work Load			144.00
Total work load/ 30 hr			4.80
ECTS Credit of the Course			5.00

25	**CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	5	5	5	0	0	5	4	0	5	5	0	0	0	0	0	0
ÖK2	3	3	2	0	0	3	2	0	3	3	0	0	0	0	0	0
ÖK3	5	5	4	0	0	5	3	0	3	3	0	0	0	0	0	0
ÖK4	5	5	5	0	0	5	3	0	3	4	0	0	0	0	0	0

ÖK5	5	5	5	0	0	5	3	0	3	4	0	0	0	0	0	0
ÖK6	5	5	5	0	0	5	3	0	3	4	0	0	0	0	0	0
ÖK7	5	4	4	0	0	4	3	0	2	3	0	0	0	0	0	0
ÖK8	4	4	4	0	0	3	3	0	2	4	0	0	0	0	0	0
ÖK9	4	4	4	0	0	3	2	0	4	2	0	0	0	0	0	0
ÖK10	4	3	4	0	0	2	2	0	2	4	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications					
Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**