Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Particle Physics I	FZK469	7. Semester	3 + 0	3.0	7.0

Prerequisites	None

Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Assist. Prof. Dr. Ayşe KÜÇÜKARSLAN
Instructors	
Assistants	
Course Objectives	this course aims to investigate and understand fundamentals of particle physics
Course Content	Definition of particles; discoveries of particles; classification of particles and their interactions; relativistic kinematics; measurement techniques, accelerators, detectors; definition of Feynman calculus.
Course Learning Outcomes	1) Discuss the structure of atom and particle 2) Solve the problem of microscopic system 3) Solve problems related fields 4) Analyze experimental datas 5) Define particles properties and interactions

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction	Lecture, Problem solving, Homework	
2. Week	A History of particle Physics , Nobel Prices in particle physics	Lecture, Problem solving, Homework	
3. Week	A time line, Earliest stages	Lecture, Problem solving, Homework	
4. Week	Fission and Fusion	Lecture, Problem solving, Homework	
5. Week	Low-energy nuclear physics, Medium-energy nuclear physics	Lecture, Problem solving, Homework	

Quick Access

Physics
- Qualification Awarded
- Level of Qualification
- Qualification Requirements and Regulations
- Specific Admission Requirements
- Recognition of Prior Learning
- Profile of the Program
- Program Key Learning Outcomes
- Occupational Profile of Graduates
- Access to Further Studies
- Course Structure & Credits
- Exam Regulations & Assessment & Grading
- Graduation Requirements
- Mode of Study
- Programme Director(or Equivalent)
- Evaluation Questionnaire
- TYYÇ

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- Course Information
- Weekly Course Content
- Resources
- Course Category
- CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
- ECTS credits and course workload

6. Week	High-energy nuclear physics, Mesons,leptons and neutrinos	Lecture, Problem solving, Homework	
7. Week	The sub-structure of the nucleon (QCD), The W and Z bosons	Lecture, Problem solving, Homework	
8. Week	Experimental Tools	Lecture, Problem solving, Homework	
9. Week	Accelerators and Detectors	Lecture, Problem solving, Homework	
10. Week	Nuclear Masses	Lecture, Problem solving, Homework	
11. Week	Experimental facts, Nuclear mass formula	Lecture, Problem solving, Homework	
12. Week	GUTS,Supersymmetry, Supergravity	Lecture, Problem solving, Homework	
13. Week	Nuclear forces	Lecture, Problem solving, Homework	
14. Week	Properties of nuclear states, Scattering of nucleons	Lecture, Problem solving, Homework	
15. Week	Repetition of The Overall Subject	Lecture, Problem solving, Homework	
16. Week	Final exam	Exam	

RESOURCES

Recommended Sources
Introduction to Elementary Particles,David Griffths, 1987, John Wiley & Sons, Inc., Germany
Particle Physics: A Very Short Introduction,Frank Close, 2004, Oxford University Press, England
Relativity A Very Short Introduction, Russell Stannard, Oxford University Press, 2008, New York

ASSESSMENT

Measurement and Evaluation Methods and Techniques
Midterm exam, homework, Final exam

COURSE CATEGORY

Course Category	Percentage
Core Courses	% 30
Area of Specialization Courses	% 70

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4	DK5
PY1	4	4	4	4	4	0
PY2	4	5	4	4	3	0
PY3	0	0	0	0	0	0
PY4	3	3	4	2	3	0
PY5	3	2	3	2	5	0
PY6	4	5	4	4	3	0
PY7	0	0	0	0	0	0
PY8	0	0	0	0	0	0

PY9	3	2	3	4	3	0
PY10	0	0	0	0	0	0
PY11	0	0	0	0	0	0
PY12	0	0	0	0	0	0
PY13	3	3	2	4	3	0
PY14	3	2	4	3	3	0
PY15	3	2	4	3	3	0

*DK = Course's Contrubution.

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

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ECTS CREDITS AND COURSE WORKLOAD

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Final Exam	1	3	3
Mid Term Exam 1	1	2	2
Assignment 1	1	20	20
Final Exam Preparation	1	30	30
Class Hours (14 weeks)	14	3	42
Mid Term Exam Preparation	1	25	25
Further Study	14	4	56
		Total Workload	178
		Total Workload / 25.5 (s)	6.98
		ECTS Credit of the Course	7