Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Particle Physics II	FZK414	8. 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	Assist. Prof. Dr. Ayşe KÜÇÜKARSLAN
Assistants	
Course Objectives	This course aims to teach Identification of particles, discoveries of particles, classification of particles and their interactions, relativistic kinematics, measurement techniques, accelerators, detectors, introduction to Feynman calculus.
Course Content	Introduction, Reaction rates and cross section, S-matrix, T and transition probability, Decay rates, three body Decay rates, two body, Scattering cross section, The electromagnetic interaction, Midterm exam, The elementary EM interaction, The Rutherford cross section, Scattering with spin, Weak interaction I, Classical Rutherford scattering, Muon decay, Parity and charge conjugation, Final
Course Learning Outcomes	1) Define many particle systems 2) Solve the problem of microscopic system 3) Solve problems in high energy 4) Study different solution methods 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	Reaction rates and cross section	Lecture, Problem solving, Homework	
3. Week	S-matrix, T and transition probability	Lecture, Problem solving, Homework	
4. Week	Decay rates, three body	Lecture, Problem	

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

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

		solving, Homework	
5. Week	Decay rates, two body	Lecture, Problem solving, Homework	
6. Week	Scattering cross section	Lecture, Problem solving, Homework	
7. Week	The electromagnetic interaction	Lecture, Problem solving, Homework	
8. Week	Midterm exam	Exam	
9. Week	The elementary EM interaction	Lecture, Problem solving, Homework	
10. Week	The Rutherford cross section	Lecture, Problem solving, Homework	
11. Week	Scattering with spin	Lecture, Problem solving, Homework	
12. Week	Weak interaction I	Lecture, Problem solving, Homework	
13. Week	Classical Rutherford scattering	Lecture, Problem solving, Homework	
14. Week	Muon decay	Lecture, Problem solving, Homework	
15. Week	Parity and charge conjugation	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, New York
"Relativity A Very Short Introduction", Russell Stannard , 2008, Oxford University Press, New York

ASSESSMENT

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

COURSE CATEGORY

Course Category	Percentage
Core Courses	% 50
Area of Specialization Courses	% 50

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	3	4	0
PY3	0	0	0	0	0	0
PY4	3	4	2	3	3	0
PY5	3	3	4	2	3	0
PY6	4	4	4	3	5	0

PY7	0	0	0	0	0	0
PY8	0	0	0	0	0	0
PY9	3	4	3	2	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	3	3	3	0
PY14	3	3	3	4	2	0
PY15	3	2	4	2	4	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)
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	25	25
Further Study	14	3	42
Assignment 1	2	20	40
Mid Term Exam Preparation	1	23	23
Final Exam	1	3	3
Mid Term Exam 1	1	3	3
		Total Workload	178
		Total Workload / 25.5 (s)	6.98
		ECTS Credit of the Course	7