

Fizik Bölümü / PHYSICS /						
Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
FZK-3027	Introduction to Nuclear Physics	3.00	0.00	0.00	3.00	6.00
Course Detail						
Course Language	: Turkish					
Qualification Degree	: Bachelor					
Course Type	: Optional					
Preconditions	: Not					
Objectives of the Course	: Atomic models, basic concepts in nuclear physics, units and dimensions; Quantum statistics, fermions, bosons, angular momentum, and parity; nuclear radius, mass, nuclear binding energy in ground state; semiempirical mass formula, nuclear elektromagnetic moments; force between the nucleons, deuteron, properties of the nuclear force; exchange force model; shell model; collective models, nuclear vibrations; nuclear rotations; radioactive decay law, half-life, mean lifetime; natural radioactivity, radioactive series; radioactive dating, units of measuring radiation; interactions of radiation with matter; measuring nuclear radiation.					
Course Contents	: Atomic Models, Basic Concepts in Nuclear Physics, Units and Dimensions, Quantum Statistics, Fermions, Bosons, Angular Momentum, and Parity, Nuclear Radius, Mass, Nuclear Binding Energy in Ground State, Semiempirical Mass Formula, Nuclear Elektromagnetic Moments, Force Between the Nucleons, Deuteron, Properties of the Nuclear Force, Exchange Force Model, Shell Model, Nuclear Rotations, Radioactive Decay Law, Half-Life, Mean Lifetime, Natural Radioactivity, Radioactive Series, Radioactive Dating, Units of Measuring Radiation, Collective Models, Nuclear Vibrations, Measuring Nuclear Radiation, Interactions of Radiation with Matter					
Recommended or Required Reading	: Krane, K. S. Nuclear Physics. Tanyel, B. (1994). Nükleer Fizik. İzmir: Ege Üniversitesi Basımevi. Cottingham, W.N.&Greenwood, Introductory Nuclear Physics. Williams, W.S.C. (1991). Nuclear and Particle Physics. Oxford: Oxford Science Publications.					
Planned Learning Activities and Teaching Methods	: Mid-term exam + Assignment + Research & Project and Presentation 40%, Final Exam 60%					
Recommended Optional Programme Components	: Knowledge of the fundamental physics courses is important.					
Instructors	: Prof. Dr. Ayşe Küçükarslan					
Instructor's Assistants	: Prof. Dr. Ayşe KÜÇÜKARSLAN					
Presentation Of Course	: Face to face					

Course Outcomes	
Upon the completion of this course a student :	
1 1) Explain the structure of atomic nucleus	
2 2) Apply knowledge of natural sciences (Mathematics, Physics)	
3 3) Analyze natural phenomena	
4 4) Formulate field related problems	
5 5) Analyze the experimental data	

Preconditions						
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Weekly Contents					
	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods
1.Week	*Atomic Models, Basic Concepts in Nuclear Physics, Units and Dimensions				
2.Week	*Quantum Statistics, Fermions, Bosons, Angular Momentum, and Parity				
3.Week	*Nuclear Radius, Mass, Nuclear Binding Energy in Ground State				
4.Week	*Semiempirical Mass Formula, Nuclear Elektromagnetic Moments				
5.Week	*Force Between the Nucleons, Deuteron, Properties of the Nuclear Force				
6.Week	*Exchange Force Model				
7.Week	*Shell Model				
8.Week	*Nuclear Rotations				
9.Week	*Radioactive Decay Law, Half-Life, Mean Lifetime				
10.Week	*Radioactivity, Radioactive Series				
11.Week	*Radioactive Dating, Units of Measuring Radiation				
12.Week	*Collective Models, Nuclear Vibrations				
13.Week	*Measuring Nuclear Radiation				
14.Week	*Interactions of Radiation with Matter				

