



ULUDAĞ ÜNİVERSİTESİ
FEN BİLİMLERİ ENSTİTÜSÜ
2017-2018 EĞİTİM ÖĞRETİM YILI DERS PLANLARI

ANABİLİM DALI		FİZİK														
BİLİM DALI / PROGRAMI		FİZİK / Yüksek Lisans Programı														
DERS AŞAMASI	I. YARIYIL / GÜZ								II. YARIYIL / BAHAR							
	Kodu	Dersin Adı	Türü	T	U	L	Kredi	AKTS	Kodu	Dersin Adı	Türü	T	U	L	Kredi	AKTS
	FZK5191	YÜKSEK LİSANS TEZ DANIŞMANLIĞI I	Z	0	1	0	0	1	FZK5192	YÜKSEK LİSANS TEZ DANIŞMANLIĞI II	Z	0	1	0	0	1
	FZK5403	İLERİ KUANTUM MEKANİĞİ I	Z	3	0	0	3	6	FZK5172	SEMİNER	Z	0	2	0	0	4
									FZK5000	FİZİKTE ARAŞTIRMA TEKNİKLERİ VE YAYIN ETİĞİ	Z	2	0	0	2	2
	FZK5181	YÜKSEK LİSANS UZMANLIK ALAN DERSİ I	S	4	0	0	0	5	FZK5182	YÜKSEK LİSANS UZMANLIK ALAN DERSİ II	S	4	0	0	0	5
	FZK5101	MANYETİK REZONANSTA DENEYSEL TEKNİKLER VE ÖLÇÜMLER	S	2	2	0	3	6	FZK5102	SIVILARDA REZONANS ÇİZGİLERİNİN ÇOK KATLI YAPISI	S	3	0	0	3	6
	FZK5103	SPEKTROSKOPİK YÖNTEMLER	S	3	0	0	3	6	FZK5104	MANYETİK REZONANS GÖRÜNTÜLEME	S	3	0	0	3	6
	FZK5105	FOTODETEKTÖRLER	S	3	0	0	3	6	FZK5106	ELEKTRO-OPTİK	S	3	0	0	3	6
	FZK5107	İLERİ ATOM FİZİĞİ	S	3	0	0	3	6	FZK5108	MOLEKÜLER FİZİK II	S	3	0	0	3	6
	FZK5109	MOLEKÜLER FİZİK I	S	3	0	0	3	6	FZK5110	YÜKSEK ENERJİ GAZ DETEKTÖRLERİN FİZİĞİ I	S	3	0	0	3	6
	FZK5111	DOZİMETRİK MALZEMELER	S	3	0	0	3	6	FZK5112	BİLGİSAYAR DESTEKLİ ENSTRÜMENTASYON II	S	3	0	0	3	6
	FZK5113	LÜMİNESANS ÇEŞİTLERİ VE UYGULAMA ALANLARI	S	3	0	0	3	6	FZK5114	NESNE YÖNELİMLİ PROGRAMLARLA VERİ ANALİZİ I	S	3	0	0	3	6
	FZK5201	MADDENİN DİELEKTRİK ÖZELLİKLERİ I	S	3	0	0	3	6	FZK5202	İNTERNET PROGRAMLAMA II	S	2	2	0	3	6
	FZK5203	İNTERNET PROGRAMLAMA I	S	2	2	0	3	6	FZK5204	YÜKSEK ENERJİ FİZİĞİNDE HESAPLAMA TEKNİKLERİ I	S	3	0	0	3	6
	FZK5205	PYTHON İLE PROGRAMLAMAYA GİRİŞ	S	3	0	0	3	6	FZK5206	RELATİVİSTİK KUANTUM MEKANİĞİ II	S	3	0	0	3	6
	FZK5207	BİLGİSAYAR DESTEKLİ ENSTRÜMENTASYON I	S	3	0	0	3	6	FZK5302	MANYETİK MADDELERİN YAPISI	S	3	0	0	3	6
	FZK5209	RELATİVİSTİK KUANTUM MEKANİĞİ I	S	3	0	0	3	6	FZK5304	İLERİ KATIHAL FİZİĞİ II	S	3	0	0	3	6
	FZK5211	STANDART MODEL VE ÖTESİ I	S	3	0	0	3	6	FZK5306	İLERİ MANYETİZMA I	S	3	0	0	3	6
	FZK5213	DENEYSEL PARÇACIK FİZİĞİNDE GAZLI DETEKTÖRLER I	S	3	0	0	3	6	FZK5308	YÜZEY OKSİT FİLMER ve TEKNOLOJİSİ	S	3	0	0	3	6
	FZK5301	MADDELERİN MANYETİK ÖZELLİKLERİ	S	3	0	0	3	6	FZK5310	SÜPERİLETKENLER I	S	3	0	0	3	6
	FZK5303	İLERİ KATIHAL FİZİĞİ I	S	3	0	0	3	6	FZK5312	YARIİLETKENLER DÜZENEKLER FİZİĞİ I	S	3	0	0	3	6
	FZK5307	İLERİ MANYETİZMA II	S	3	0	0	3	6	FZK5314	YARIİLETKENLER FİZİĞİ I	S	3	0	0	3	6
	FZK5309	ELEKTROKİMYASAL METOTLAR	S	3	0	0	3	6	FZK5316	MANYETİK İNCE FİLMER	S	3	0	0	3	6
	FZK5311	SÜPERİLETKENLER II	S	3	0	0	3	6	FZK5318	MANYETİK DOMAINLER	S	3	0	0	3	6
	FZK5313	YARIİLETKEN DÜZENEKLER FİZİĞİ II	S	3	0	0	3	6	FZK5320	YÜZEY FİZİĞİ ve İNCELEME TEKNİKLERİ	S	3	0	0	3	6
	FZK5315	YARIİLETKENLER FİZİĞİ II	S	3	0	0	3	6	FZK5324	NANOTEKNOLOJİ	S	3	0	0	3	6

	FZK5317	KATILARIN KUANTUM TEORİSİ	S	3	0	0	3	6	FZK5326	X-IŞINLARI DİFRAKSİYONU	S	3	0	0	3	6						
	FZK5319	MANYETİK KAYIPLAR	S	3	0	0	3	6	FZK5402	ELEKTROMANYETİK TEORİ	S	3	0	0	3	6						
	FZK5321	FİZİKTE ÖLÇME TEKNİKLERİ	S	3	0	0	3	6	FZK5404	FİZİKTE SAYISAL ÇÖZÜM YÖNTEMLERİ	S	2	2	0	3	6						
	FZK5401	FİZİKTE MATEMATİK YÖNTEMLER I	S	3	0	0	3	6	FZK5502	İLERİ NÜKLEER SPEKTROSKOPİ II	S	3	0	0	3	6						
	FZK5405	İLERİ TEORİK MEKANİK	S	3	0	0	3	6	FZK5504	NÜKLEER RADYASYON DEDEKSİYONU	S	3	0	0	3	6						
	FZK5501	İLERİ NÜKLEER SPEKTROSKOPİ I	S	3	0	0	3	6	FZK5506	İLERİ NÖTRON FİZİĞİ I	S	3	0	0	3	6						
	FZK5503	İLERİ NÜKLEER FİZİK I	S	3	0	0	3	6	FZK5508	NÜKLEER ETKİLEŞMELER	S	3	0	0	3	6						
	FZK5505	NÜKLEER MODELLER	S	3	0	0	3	6	FZK5512	NÜKLEER FİZİKTE ÖRNEKLEME TEKNİKLERİ II	S	3	0	0	3	6						
	FZK5507	İLERİ NÖTRON FİZİĞİ II	S	3	0	0	3	6	FZK5514	İLERİ MİKROSKOPİ UYGULAMALARI	S	3	0	0	3	6						
	FZK5509	İLERİ RADYASYON FİZİĞİ I	S	3	0	0	3	6	FZK5602	BÜYÜK BİRLEŞİK TEORİLER	S	3	0	0	3	6						
	FZK5511	NÜKLEER FİZİKTE ÖRNEKLEME TEKNİKLERİ I	S	3	0	0	3	6	FZK5604	YÜKLÜ PARÇACIK FİZİĞİ	S	3	0	0	3	6						
	FZK5513	İLERİ MİKROSKOPİ	S	3	0	0	3	6	FZK5606	YÜKSEK ENERJİ DETEKTÖRLERİ I	S	3	0	0	3	6						
	FZK5601	TEMEL SAÇILMA TEORİSİ	S	3	0	0	3	6	FZK5608	YÜKSEK ENERJİ BENZETİŞİM TEKNİKLERİ I	S	3	0	0	3	6						
	FZK5603	TEMEL PARÇACIKLAR FİZİĞİ I	S	3	0	0	3	6	FZK5612	İLERİ OPTİK II	S	3	0	0	3	6						
	FZK5605	SİMETRİLER ve PARÇACIK SINIFLANDIRMASI	S	3	0	0	3	6	FZK5614	İNCE FİLM FİZİĞİ	S	3	0	0	3	6						
	FZK5607	HIZLANDIRICI FİZİĞİNE GİRİŞ	S	3	0	0	3	6														
	FZK5609	İLERİ OPTİK I	S	3	0	0	3	6														
	FZK5611	GÜNEŞ ENERJİSİ	S	3	0	0	3	6														
	FZK5613	KAPLAMA TEKNİKLERİ	S	3	0	0	3	6														
	Toplam Kredi								12	30	Toplam Kredi								11	30		
TEZ AŞAMASI	III. YARIYIL / GÜZ									IV. YARIYIL / BAHAR												
	FZK5183	YÜKSEK LİSANS UZMANLIK ALAN DERSİ III	Z	4	0	0	0	5	FZK5184	YÜKSEK LİSANS UZMANLIK ALAN DERSİ IV	Z	4	0	0	0	5						
	FZK5193	YÜKSEK LİSANS TEZ DANIŞMANLIĞI III	Z	0	1	0	0	25	FZK5194	YÜKSEK LİSANS TEZ DANIŞMANLIĞI IV	Z	0	1	0	0	25						
	Toplam Kredi									0	30	Toplam Kredi									0	30
	TOPLAM KREDİ: 23- TOPLAM AKTS: 120																					

Not: Öğrenci, seçmeli derslerden her yarıyıl toplam 8 kredilik 3 ders seçecektir.

Öğrenci isterse, danışmanının onayı ile her yarıyıl için **1 (bir)** seçmeli dersini alan dışından da alabilir.



ULUDAĞ UNIVERSITY
GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
2017-2018 ACADEMIC YEAR COURSE PLAN

DEPARTMENT OF	PHYSICS
DEPARTMENT / PROGRAM	PHYSICS/ Master'sDegree Program

COURSE STAGE	I. TERM / FALL								II. TERM / SPRING							
	Code	Course Title	Type	T	U	L	Credit	ECTS	Code	Course Title	Type	T	U	L	Credit	ECTS
	PHYS 5191	MA THESIS I	Z	0	1	0	0	1	PHYS 5192	MA THESIS II	Z	0	1	0	0	1
	PHYS 5403	ADVANCED QUANTUM MECHANICS I	Z	3	0	0	3	6	PHYS 5172	SEMINAR	Z	0	2	0	0	4
									OTO5000	RESEARCH TECHNIQUES and PUBLICATION ETHICS in PHYSICS	Z	2	0	0	2	2
	PHYS5181	ADVANCED TOPICS IN MATHESIS I	S	4	0	0	0	5	PHYS5182	ADVANCED TOPICS IN MATHESIS II	S	3	0	0	0	5
	PHYS5101	EXPERIMENTAL TECHNIQUES AND MEASUREMENTS IN MR	S	2	2	0	3	6	PHYS 5102	MULTIPLE LAYER STRUCTURE OF RESONANCE LINE IN LIQUIDS	S	3	0	0	3	6
	PHYS5103	SPECTROSCOPIC METHODS	S	3	0	0	3	6	PHYS5104	MAGNETIC RESONANCE IMAGING	S	3	0	0	3	6
	PHYS5105	PHOTO DETECTORS	S	3	0	0	3	6	PHYS5106	ELECTRO-OPTIC	S	3	0	0	3	6
	PHYS5107	ADVANCED ATOMIC PHYSICS I	S	3	0	0	3	6	PHYS5108	MOLECULAR PHYSICS II	S	3	0	0	3	6
	PHYS5109	MOLECULAR PHYSICS I	S	3	0	0	3	6	PHYS5110	HIGH ENERGY GAS CHAMBER PHYSICS I	S	3	0	0	3	6
	PHYS5111	DOSEMTRIC MATERIALS	S	3	0	0	3	6	PHYS5112	COMPUTER BASED INSTRUMENTATION II	S	3	0	0	3	6
	PHYS5113	LUMINESCENCE TYPES AND APPLICATION AREAS	S	3	0	0	3	6	PHYS5114	DATA ANALYSIS WITH OBJECT ORIENTED PROGRAMMING I	S	3	0	0	3	6
	PHYS 5201	DIELECTRIC PROPERTIES OF MATERIALS I	S	3	0	0	3	6	PHYS5202	INTERNET PROGRAMMING II	S	2	2	0	3	6
	PHYS 5203	INTERNET PROGRAMMING I	S	2	2	0	3	6	PHYS5204	COMPUTATIONAL TECHNIQUES IN HIGH ENERGY PHYSICS I	S	3	0	0	3	6
	PHYS 5205	OBJECT ORIENTED DATA ANALYSIS TO PYTHON PROGRAMMING	S	3	0	0	3	6	PHYS5206	RELATIVISTIC QUANTUM MECHANICS II	S	3	0	0	3	6
	PHYS 5207	COMPUTER BASED INSTRUMENTATION I	S	3	0	0	3	6	PHYS5302	STRUCTURE OF MAGNETIC MATERIALS	S	3	0	0	3	6
	PHYS 5209	RELATIVISTIC QUANTUM MECHANICS I	S	3	0	0	3	6	PHYS5304	ADVANCED SOLID STATE II	S	3	0	0	3	6
	PHYS 5211	BEYOND THE STANDARD MODEL I	S	3	0	0	3	6	PHYS5306	ADVANCED MAGNETISM I	S	3	0	0	3	6
	PHYS 5213	GAS DETECTORS IN EXPERIMENTAL PARTICLE PHYSICS I	S	3	0	0	3	6	PHYS5308	SURFACE OXIDE FILMS AND THEIR TECHNOLOGIES	S	3	0	0	3	6
	PHYS 5301	MAGNETIC PROPERTIES OF MATERIALS	S	3	0	0	3	6	PHYS5310	SUPERCONDUCTORS I	S	3	0	0	3	6
	PHYS 5303	ADVANCED SOLID STATE PHYSICS I	S	3	0	0	3	6	PHYS5312	PHYSICS OF SEMICONDUCTOR DEVICES I	S	3	0	0	3	6
	PHYS 5307	ADVANCED MAGNETISM II	S	3	0	0	3	6	PHYS5314	PHYSICS OF SEMICONDUCTORS I	S	3	0	0	3	6
	PHYS 5309	ELECTROCHEMICAL METHODS	S	3	0	0	3	6	PHYS5316	MAGNETIC THIN FILMS	S	3	0	0	3	6
	PHYS 5311	SUPERCONDUCTIVITY II	S	3	0	0	3	6	PHYS5318	MAGNETIC DOMAINS	S	3	0	0	3	6
	PHYS 5313	PHYSICS OF SEMICONDUCTOR DEVICES II	S	3	0	0	3	6	PHYS5320	SURFACE PHYSICS AND ANALYSIS TECHNIQUES	S	3	0	0	3	6
	PHYS 5315	PHYSICS OF SEMICONDUCTORS II	S	3	0	0	3	6	PHYS5324	NANOTECHNOLOGY	S	3	0	0	3	6
	PHYS 5317	QUANTUM THEORY OF SOLIDS	S	3	0	0	3	6	PHYS5326	X-RAY DIFFRACTIONS	S	3	0	0	3	6



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FEN BİLİMLERİ ENSTİTÜSÜ
2017-2018 EĞİTİM ÖĞRETİM YILI DERS PLANLARI

ANABİLİM DALI

FİZİK

BİLİM DALI / PROGRAMI

FİZİK/ Doktora Programı

	I. YARIYIL / GÜZ								II. YARIYIL / BAHAR							
	Kodu	Dersin Adı	Türü	T	U	L	Kredi	AKTS	Kodu	Dersin Adı	Türü	T	U	L	Kredi	AKTS
	FZK6191	DOKTORA TEZ DANIŞMANLIĞI I	Z	0	1	0	0	1	FZK6192	DOKTORA TEZ DANIŞMANLIĞI II	Z	0	1	0	0	1
	FZK6101	NÜKLEER MANYETİK REZONANS I (ATOM VE MOLEKÜL FİZ.A.B.D. İÇİN)	Z	3	0	0	3	6	FZK6172	SEMİNER	Z	0	2	0	0	4
	FZK6201	ULTRASES(GENEL FİZİK A.B.D. İÇİN)	Z	3	0	0	3	6	FZK6102	NÜKLEER MANYETİK REZONANS II (ATOM VE MOLEKÜL FİZ.A.B.D. İÇİN)	Z	3	0	0	3	6
	FZK6303	KATI MADDELERİN ÖZELLİKLERİ I (KATIHAL FİZİĞİ A.B.D. İÇİN)	Z	3	0	0	3	6	FZK6608	KUANTUMLU ALANLAR TEORİSİ I (YÜK.EN.FİZ.A.B.D İÇİN)	Z	3	0	0	3	6
	FZK6501	İLERİ NÜKLEER FİZİK II (NÜKLEER FİZİK A.B.D.İÇİN)	Z	3	0	0	3	6	FEN6000	ARAŞTIRMA TEKNİKLERİ VE YAYIN ETİĞİ	Z	2	0	0	2	2
	FZK6181	DOKTORA UZMANLIK ALAN DERSİ I	S	4	0	0	0	5	FZK6182	DOKTORA UZMANLIK ALAN DERSİ II	S	4	0	0	0	5
	FZK6103	ELEKTRON SPİN REZONANS I	S	3	0	0	3	6	FZK6104	ELEKTROSPİN REZONANS II	S	3	0	0	3	6
	FZK6105	FİZİKSEL OPTİK I	S	3	0	0	3	6	FZK6106	FİZİKSEL OPTİK II	S	3	0	0	3	6
	FZK6107	TERMOLÜMİNESANS VE VERİ ANALİZİ I	S	3	0	0	3	6	FZK6108	TERMOLÜMİNESANS VE VERİ ANALİZİ II	S	3	0	0	3	6
	FZK6109	YÜKSEK ENERJİ GAZ DETEKTÖRLERİN FİZİĞİ II	S	3	0	0	3	6	FZK6110	GENEL RELATİVİTE	S	3	0	0	3	6
	FZK6111	YÜKSEK ENERJİ FİZİĞİNDE HESAPLAMA TEKNİKLERİ II	S	3	0	0	3	6	FZK6112	STANDART MODEL VE ÖTESİ II	S	3	0	0	3	6
	FZK6113	DENEYSEL PARÇACIK FİZİĞİNDE GAZLI DETEKTÖRLER II	S	3	0	0	3	6	FZK6202	ELEKTRON MİKROSKOPLARI ve UYGULAMALARI	S	2	2	0	3	6
	FZK6203	MADDENİN DİELEKTRİK ÖZELLİKLERİ II	S	3	0	0	3	6	FZK6302	YAPAY SİNİR SİSTEMLERİ	S	3	0	0	3	6
	FZK6301	MANYETİZMADA SAYISAL ÇÖZÜM YÖNTEMLERİ	S	3	0	0	3	6	FZK6304	KATI MADDELERİN ÖZELLİKLERİ II	S	3	0	0	3	6
	FZK6305	X-İŞINLARI ve UYGULAMALARI	S	2	2	0	3	6	FZK6308	MİKROMANYETİZMA II	S	3	0	0	3	6
	FZK6307	MİKROMANYETİZMA I	S	3	0	0	3	6	FZK6310	İLERİ MANYETİK MADDELER II	S	3	0	0	3	6
	FZK6309	İLERİ MANYETİK MADDELER I	S	3	0	0	3	6	FZK6312	NANOFİZİK ve NANOBİLİM	S	3	0	0	3	6
	FZK6311	HETEROEKLEMLER ve METAL- YARIİLETKEN EKLEMLER	S	3	0	0	3	6	FZK6314	YARIİLETKENLERİN OPTİK ÖZELLİKLERİ	S	3	0	0	3	6
	FZK6315	MANYETİK ÇEKİRDEKLER ve ÖZELLİKLERİ I	S	3	0	0	3	6	FZK6316	MANYETİK ÇEKİRDEKLER ve ÖZELLİKLERİ II	S	3	0	0	3	6
	FZK6317	DİYOT LAZERLER I	S	3	0	0	3	6	FZK6318	DİYOT LAZERLER II	S	3	0	0	3	6
	FZK6319	FOTONİK VE LAZERLER	S	3	0	0	3	6	FZK6402	İLERİ KUANTUM MEKANİĞİ II	S	3	0	0	3	6
	FZK6401	FİZİKTE MATEMATİK YÖNTEMLER II	S	3	0	0	3	6	FZK6502	NÜKLEER SHELL MODELİ	S	3	0	0	3	6
	FZK6503	İLERİ RADYASYON FİZİĞİ II	S	3	0	0	3	6	FZK6504	NÜKLEER OLAYLAR İÇİN SAYISAL UYGULAMALAR I	S	2	2	0	3	6

DERS AŞAMASI

FZK6505	NÜKLEER OLAYLAR İÇİN SAYISAL UYGULAMALAR II	S	3	0	0	3	6	FZK6602	TEMEL PARÇACIKLAR FİZİĞİ II	S	3	0	0	3	6				
FZK6601	ELEKTROZAYIF ETKİLEŞMELER	S	3	0	0	3	6	FZK6604	AYAR TEORİLERİ	S	3	0	0	3	6				
FZK6603	PARÇACIK FİZİĞİNDE LİE CEBRİ	S	3	0	0	3	6	FZK6606	KUANTUM KROMO DİNAMİĞİ	S	3	0	0	3	6				
FZK6605	KUANTUM ELEKTRO DİNAMİĞİ	S	3	0	0	3	6	FZK6610	YÜKSEK ENERJİ DETEKTÖRLERİ II	S	3	0	0	3	6				
FZK6607	HADRON FİZİĞİ ve KUARK MODELİ	S	3	0	0	3	6	FZK6612	YÜKSEK ENERJİ BENZETİŞİM TEKNİKLERİ II	S	3	0	0	3	6				
FZK6609	KUANTUM ALANLAR TEORİSİ II	S	3	0	0	3	6	FZK6614	ORGANİK ELEKTRONİK	S	3	0	0	3	6				
FZK6613	İLERİ KATILAŞMA TEKNİKLERİ	S	3	0	0	3	6												
Toplam Kredi								12	30	Toplam Kredi								11	30
III. YARIYIL / GÜZ								IV. YARIYIL / BAHAR											
FZK6183	DOKTORA UZMANLIK ALAN DERSİ III	Z	4	0	0	0	5	FZK6184	DOKTORA UZMANLIK ALAN DERSİ IV	Z	4	0	0	0	5				
FZK6193	DOKTORA TEZ DANIŞMANLIĞI III	Z	0	1	0	0	20	FZK6194	DOKTORA TEZ DANIŞMANLIĞI IV	Z	0	1	0	0	25				
FZK6177	DOKTORA YETERLİK SINAVI	Z	0	0	0	0	5												
Toplam Kredi								0	30	Toplam Kredi								0	30
V. YARIYIL / GÜZ								VI. YARIYIL / BAHAR											
FZK6185	DOKTORA UZMANLIK ALAN DERSİ V	Z	4	0	0	0	5	FZK6186	DOKTORA UZMANLIK ALAN DERSİ VI	Z	4	0	0	0	6				
FZK6195	DOKTORA TEZ DANIŞMANLIĞI V	Z	0	1	0	0	25	FZK6196	DOKTORA TEZ DANIŞMANLIĞI VI	Z	0	1	0	0	25				
Toplam Kredi								0	30	Toplam Kredi								0	30
VII. YARIYIL / GÜZ								VIII. YARIYIL / BAHAR											
FZK6187	DOKTORA UZMANLIK ALAN DERSİ VII	Z	4	0	0	0	5	FZK6188	DOKTORA UZMANLIK ALAN DERSİ VIII	Z	4	0	0	0	5				
FZK6197	DOKTORA TEZ DANIŞMANLIĞI VII	Z	0	1	0	0	25	FZK6198	DOKTORA TEZ DANIŞMANLIĞI VIII	Z	0	1	0	0	25				
Toplam Kredi								0	30	Toplam Kredi								0	30
TOPLAM KREDİ: 23 - TOPLAM AKTS: 240																			

Not: Öğrenci, seçmeli derslerden her yarıyıl toplam 3 kredilik 3(ÜÇ)ders seçecektir. Öğrenci isterse, danışmanının onayı ile her yarıyıl için 1 (bir) seçmeli dersini alan dışından da alabilir.

* Yeterlik Sınavından başarılı olmak ön koşuldur; III. yarıyıl da belirtilen dersleri alabilmek için yeterlik sınavına girip başarılı olmak gerekir.** Mesleki Eğitim Dersi olarak tez aşamasında alınacaktır.



ULUDAĞ UNIVERSITY
GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
2017- 2018 ACADEMIC YEAR COURSE PLAN

DEPARTMENT OF		PHYSICS														
DEPARTMENT / PROGRAM		PHYSICS / Doctoral Program														
COURSE STAGE	I. TERM / FALL								II. TERM / SPRING							
	Code	Course Title	Type	T	U	L	Credit	ECTS	Code	Course Title	Type	T	U	L	Credit	ECTS
	PHYS6191	PHD THESIS I	Z	0	1	0	0	1	PHYS6192	PHD THESIS II	Z	0	1	0	0	1
	PHSY6101	NUCLEARMAGNETİCRESONANCE I(ATOM VE MOLEKÜL FİZ.A.B.D. İÇİN)	Z	3	0	0	3	5	PHYS6172	SEMİNAR	Z	0	2	0	0	4
	PHSY6201	ULTRASOUND(GENEL FİZ.A.B.D.İÇİN)	Z	3	0	0	3	5	PHSY6102	NUCLEARMAGNETİCRESONANCE II (ATOM VE MOLEKÜL FİZİĞİ A.B.D.İÇİN)	Z	3	0	0	3	6
	PHSY6303	PROPERTIES OF SOLID MATERIALS I(KATIHALFİZ.A.B.D.İÇİN)	Z	3	0	0	3	5	PHSY6608	QUANTUMFIELDTHEORY I (YÜK.EN.FİZ.A.B.D İÇİN)	Z	3	0	0	3	6
	PHSY6501	ADVANCED NUCLEARPHYSİCS II(NÜKLEER FİZ.A.B.D. İÇİN)	Z	3	0	0	3	5	FEN6000	RESEARCH TECHNIQUES and PUBLICATION ETHICS	Z	2	0	0	2	2
	PHYS6181	ADVANCED TOPİCSINPHDTHESIS I	S	4	0	0	0	5	PHYS6182	ADVANCED TOPİCSINPHDTHESIS II	S	4	0	0	0	5
	PHSY6103	ELECTRON SPİN RESONANCE I	S	3	0	0	3	6	PHSY6104	ELECTRON SPİN RESONANCE II	S	3	0	0	3	6
	PHSY6105	PHYSICAL OPTİCS I	S	3	0	0	3	6	PHSY6106	PHYSICAL OPTİCS II	S	3	0	0	3	6
	PHSY6107	THERMOLÜMINESCENCE AND DATA ANALYSIS I	S	3	0	0	3	6	PHSY6108	THERMOLÜMINESCENCE AND DATA ANALYSIS II	S	3	0	0	3	6
	PHYS6109	HIGH ENERGY GAS CHAMBER PHYSİCS II	S	3	0	0	3	6	PHSY6110	GENERAL RELATİVİTY	S	3	0	0	3	6
	PHYS6111	COMPUTATİONAL TECHNIQUES IN HIGH ENERGY PHYSİCS II	S	3	0	0	3	6	PHSY6112	BEYOND THE STANDARD MODEL II	S	3	0	0	3	6
	PHYS6113	GAS DETECTORS IN EXPERİMENTAL PARTICLE PHYSİCS II	S	3	0	0	3	6	PHSY6202	ELECTRONMİCROSCOPESAND APPLİCATIONS	S	2	2	0	3	6
	PHSY6203	DİELECTRİCPROPERTIES OF MATERIALS II	S	3	0	0	3	6	PHSY6302	ARTİFİCİALNEURAL NETWORK	S	3	0	0	3	6
	PHSY6301	NUMERİCAL ANALYSIS METHODS İN MAGNETİSM	S	3	0	0	3	6	PHSY6304	PROPERTIES OF SOLID MATERIALS II	S	3	0	0	3	6
	PHSY6305	X-RAYSAND APPLİCATIONS	S	2	2	0	3	6	PHSY6308	MİCROMAGNETİSM II	S	3	0	0	3	6
	PHSY6307	MİCROMAGNETİSM I	S	3	0	0	3	6	PHSY6310	ADVANCED MAGNETİCMATERIALS II	S	3	0	0	3	6
	PHSY6309	ADVANCED MAGNETİCMATERIAL I	S	3	0	0	3	6	PHSY6312	NANOPHYSİCSANDNANOSCIENCE	S	3	0	0	3	6
	PHSY6311	HETEROJUNCTİONSAND METAL-SEMİKONDUKTORJUNCTİONS	S	3	0	0	3	6	PHSY6314	OPTİCAL PROPERTIES OF SEMİCONDUCTORS	S	3	0	0	3	6
	PHSY6315	MAGNETİCCORESANDPROPERTIES I	S	3	0	0	3	6	PHSY6316	MAGNETİCCORESANDPROPERTIES II	S	3	0	0	3	6
	PHSY6317	DİODELASERS I	S	3	0	0	3	6	PHSY6318	DİODELASERS II	S	3	0	0	3	6
	PHSY6319	PHOTONİCSANDLASERS	S	3	0	0	3	6	PHSY6402	ADVANCED QUANTUM MECHANİCS II	S	3	0	0	3	6
	PHSY6401	MATHEMATİCAL METHODS İN PHYSİCS II	S	3	0	0	3	6	PHSY6502	NUCLEAR SHELL MODEL	S	3	0	0	3	6
	PHSY6503	ADVANCED RADİATİONPHYSİCS II	S	3	0	0	3	6	PHSY6504	NUMERİCAL APPLİCATIONS FORNUCLEAREVENTS I	S	2	2	0	3	6

PHSY6505	NUMERICAL APPLICATIONS FOR NUCLEAR EVENTS II	S	3	0	0	3	6	PHSY6602	ELEMENTARY PARTICLES PHYSICS II	S	3	0	0	3	6				
PHSY6601	ELECTROWEAK INTERACTIONS	S	3	0	0	3	6	PHSY6604	GAUGE THEORIES	S	3	0	0	3	6				
PHSY6603	LIE ALGEBRA IN PARTICLE PHYSICS	S	3	0	0	3	6	PHSY6606	QUANTUM CHROMODYNAMICS	S	3	0	0	3	6				
PHSY6605	QUANTUM ELECTRODYNAMICS	S	3	0	0	3	6	PHSY6610	HIGH ENERGY DETECTORS II	S	3	0	0	3	6				
PHSY6607	HADRON PHYSICS AND QUARK MODEL	S	3	0	0	3	6	PHSY6612	HIGH ENERGY SIMULATION TECHNIQUES II	S	3	0	0	3	6				
PHSY6609	QUANTUM FIELD THEORY II	S	3	0	0	3	6	PHSY6614	ORGANIC ELECTRONIC	S	3	0	0	3	6				
PHSY6613	ADVANCED SOLIDIFICATION TECHNIQUES	S	3	0	0	3	6												
Toplam Kredi								14	30	Toplam Kredi								11	30
III. TERM / FALL								IV. TERM / SPRING											
PHYS6183	ADVANCED TOPICS IN PHD THESIS III	Z	4	0	0	0	5	PHYS6184	ADVANCED TOPICS IN PHD THESIS IV	Z	4	0	0	0	5				
PHYS6193	PHD THESIS III	Z	0	1	0	0	20	PHYS6194	PHD THESIS IV	Z	0	1	0	0	25				
PHYS6177	PHD PROFICIENCY EXAMINATION	Z	0	0	0	0	5												
Toplam Kredi								0	30	Toplam Kredi								0	30
V. TERM / FALL								VI. TERM / SPRING											
PHYS6185	ADVANCED TOPICS IN PHD THESIS V	Z	4	0	0	0	5	PHYS6186	ADVANCED TOPICS IN PHD THESIS VI	Z	4	0	0	0	5				
PHYS6195	PHD THESIS V	Z	0	1	0	0	25	PHYS6196	PHD THESIS VI	Z	0	1	0	0	25				
Toplam Kredi								0	30	Toplam Kredi								0	30
VII. TERM / FALL								VIII. TERM / SPRING											
PHYS6187	ADVANCED TOPICS IN PHD THESIS VII	Z	4	0	0	0	5	PHYS6188	ADVANCED TOPICS IN PHD THESIS VIII	Z	4	0	0	0	5				
PHYS6197	PHD THESIS VII	Z	0	1	0	0	25	PHYS6198	PHD THESIS VIII	Z	0	1	0	0	25				
Toplam Kredi								0	30	Toplam Kredi								0	30
TOTAL CREDITS: 23 - TOTAL ECTS: 240																			

Not: The student is expected to take a total of credited (.....) selective courses every academic term.

The student has the option of choosing one selective course from another department with the endorsement of the supervisor. *Success in Ph.D. qualifying exam is a prerequisite.



ULUDAĞ ÜNİVERSİTESİ
FEN BİLİMLERİ ENSTİTÜSÜ
2017-2018 EĞİTİM ÖĞRETİM YILI DERS PLANLARI

ANABİLİM DALI

FİZİK

BİLİM DALI / PROGRAMI

FİZİK/ BÜTÜNLEŞTİRİLMİŞ DOKTORA PROGRAMI

I. YARIYIL / GÜZ									II. YARIYIL / BAHAR						
Kodu	Dersin Adı	Türü	T	U	L	Kredi	AKTS	Kodu	Dersin Adı	Türü	T	U	L	Kredi	AKTS
FZK6191	DOKTORA TEZ DANIŞMANLIĞI I	Z	0	1	0	0	1	FZK6192	DOKTORA TEZ DANIŞMANLIĞI II	Z	0	1	0	0	1
FZK6181	DOKTORA UZMANLIK ALAN DERSİ I	S	4	0	0	0	5	FZK6182	DOKTORA UZMANLIK ALAN DERSİ II	S	4	0	0	0	5
FZK5403	İLERİ KUANTUM MEKANİĞİ I	Z	3	0	0	3	6	FZK5102	SIVILARDA REZONANS ÇİZGİLERİNİN ÇOK KATLI YAPISI	S	3	0	0	3	6
FZK5101	MANYETİK REZONANSTA DENEYSEL TEKNİKLER VE ÖLÇÜMLER	S	2	2	0	3	6	FZK5104	MANYETİK REZONANS GÖRÜNTÜLEME	S	3	0	0	3	6
FZK5103	SPEKTROSKOPİK YÖNTEMLER	S	3	0	0	3	6	FZK5106	ELEKTRO-OPTİK	S	3	0	0	3	6
FZK5105	FOTODETEKTÖRLER	S	3	0	0	3	6	FZK5108	MOLEKÜLER FİZİK II	S	3	0	0	3	6
FZK5107	İLERİ ATOM FİZİĞİ	S	3	0	0	3	6	FZK5110	YÜKSEK ENERJİ GAZ DETEKTÖRLERİN FİZİĞİ I	S	3	0	0	3	6
FZK5109	MOLEKÜLER FİZİK I	S	3	0	0	3	6	FZK5112	BİLGİSAYAR DESTEKLİ ENSTRÜMENTASYON II	S	3	0	0	3	6
FZK5111	DOZİMETRİK MALZEMELER	S	3	0	0	3	6	FZK5114	NESNE YÖNELİMLİ PROGRAMLARLA VERİ ANALİZİ I	S	3	0	0	3	6
FZK5113	LÜMİNESANS ÇEŞİTLERİ VE UYGULAMA ALANLARI	S	3	0	0	3	6	FZK5202	İNTERNET PROGRAMLAMA II	S	2	2	0	3	6
FZK5201	MADDENİN DİELEKTRİK ÖZELLİKLERİ I	S	3	0	0	3	6	FZK5204	YÜKSEK ENERJİ FİZİĞİNDE HESAPLAMA TEKNİKLERİ I	S	3	0	0	3	6
FZK5203	İNTERNET PROGRAMLAMA I	S	2	2	0	3	6	FZK5206	RELATİVİSTİK KUANTUM MEKANİĞİ II	S	3	0	0	3	6
FZK5205	PYTHON İLE PROGRAMLAMAYA GİRİŞ	S	3	0	0	3	6	FZK5302	MANYETİK MADDELERİN YAPISI	S	3	0	0	3	6
FZK5207	BİLGİSAYAR DESTEKLİ ENSTRÜMENTASYON I	S	3	0	0	3	6	FZK5304	İLERİ KATIHAL FİZİĞİ II	S	3	0	0	3	6
FZK5209	RELATİVİSTİK KUANTUM MEKANİĞİ I	S	3	0	0	3	6	FZK5306	İLERİ MANYETİZMA I	S	3	0	0	3	6
FZK5211	STANDART MODEL VE ÖTESİ I	S	3	0	0	3	6	FZK5308	YÜZEY OKSİT FİMLER ve TEKNOLOJİSİ	S	3	0	0	3	6
FZK5213	DENEYSEL PARÇACIK FİZİĞİNDE GAZLI DETEKTÖRLER I	S	3	0	0	3	6	FZK5310	SÜPERİLETKENLER I	S	3	0	0	3	6
FZK5301	MADDELERİN MANYETİK ÖZELLİKLERİ	S	3	0	0	3	6	FZK5312	YARIİLETKENLER DÜZENEKLER FİZİĞİ I	S	3	0	0	3	6
FZK5303	İLERİ KATIHAL FİZİĞİ I	S	3	0	0	3	6	FZK5314	YARIİLETKENLER FİZİĞİ I	S	3	0	0	3	6
FZK5307	İLERİ MANYETİZMA II	S	3	0	0	3	6	FZK5316	MANYETİK İNCE FİMLER	S	3	0	0	3	6
FZK5309	ELEKTROKİMYASAL METOTLAR	S	3	0	0	3	6	FZK5318	MANYETİK DOMAİNLER	S	3	0	0	3	6
FZK5311	SÜPERİLETKENLER II	S	3	0	0	3	6	FZK5320	YÜZEY FİZİĞİ ve İNCELEME TEKNİKLERİ	S	3	0	0	3	6
FZK5313	YARIİLETKEN DÜZENEKLER FİZİĞİ II	S	3	0	0	3	6	FZK5324	NANOTEKNOLOJİ	S	3	0	0	3	6
FZK5315	YARIİLETKENLER FİZİĞİ II	S	3	0	0	3	6	FZK5326	X-İŞINLARI DİFRAKSİYONU	S	3	0	0	3	6

DERS AŞAMASI

FZK5317	KATILARIN KUANTUM TEORİSİ	S	3	0	0	3	6	FZK5402	ELEKTROMANYETİK TEORİ	S	3	0	0	3	6				
FZK5319	MANYETİK KAYIPLAR	S	3	0	0	3	6	FZK5404	FİZİKTE SAYISAL ÇÖZÜM YÖNTEMLERİ	S	2	2	0	3	6				
FZK5321	FİZİKTE ÖLÇME TEKNİKLERİ	S	3	0	0	3	6	FZK5502	İLERİ NÜKLEER SPEKTROSKOPİ II	S	3	0	0	3	6				
FZK5401	FİZİKTE MATEMATİK YÖNTEMLER I	S	3	0	0	3	6	FZK5504	NÜKLEER RADYASYON DEDEKSİYONU	S	3	0	0	3	6				
FZK5405	İLERİ TEORİK MEKANİK	S	3	0	0	3	6	FZK5506	İLERİ NÖTRON FİZİĞİ I	S	3	0	0	3	6				
FZK5501	İLERİ NÜKLEER SPEKTROSKOPİ I	S	3	0	0	3	6	FZK5508	NÜKLEER ETKİLEŞMELER	S	3	0	0	3	6				
FZK5503	İLERİ NÜKLEER FİZİK I	S	3	0	0	3	6	FZK5512	NÜKLEER FİZİKTE ÖRNEKLEME TEKNİKLERİ II	S	3	0	0	3	6				
FZK5505	NÜKLEER MODELLER	S	3	0	0	3	6	FZK5514	İLERİ MİKROSKOPİ UYGULAMALARI	S	3	0	0	3	6				
FZK5507	İLERİ NÖTRON FİZİĞİ II	S	3	0	0	3	6	FZK5602	BÜYÜK BİRLEŞİK TEORİLER	S	3	0	0	3	6				
FZK5509	İLERİ RADYASYON FİZİĞİ I	S	3	0	0	3	6	FZK5604	YÜKLÜ PARÇACIK FİZİĞİ	S	3	0	0	3	6				
FZK5511	NÜKLEER FİZİKTE ÖRNEKLEME TEKNİKLERİ I	S	3	0	0	3	6	FZK5606	YÜKSEK ENERJİ DETEKTÖRLERİ I	S	3	0	0	3	6				
FZK5513	İLERİ MİKROSKOPİ	S	3	0	0	3	6	FZK5608	YÜKSEK ENERJİ BENZETİŞİM TEKNİKLERİ I	S	3	0	0	3	6				
FZK5601	TEMEL SAÇILMA TEORİSİ	S	3	0	0	3	6	FZK5612	İLERİ OPTİK II	S	3	0	0	3	6				
FZK5603	TEMEL PARÇACIKLAR FİZİĞİ I	S	3	0	0	3	6	FZK5614	İNCE FİLM FİZİĞİ	S	3	0	0	3	6				
FZK5605	SİMETRİLER ve PARÇACIK SINIFLANDIRMASI	S	3	0	0	3	6												
FZK5607	HIZLANDIRICI FİZİĞİNE GİRİŞ	S	3	0	0	3	6												
FZK5609	İLERİ OPTİK I	S	3	0	0	3	6												
FZK5611	GÜNEŞ ENERJİSİ	S	3	0	0	3	6												
FZK5613	KAPLAMA TEKNİKLERİ	S	3	0	0	3	6												
							Toplam Kredi	12	30								Toplam Kredi	12	30
III. YARIYIL / GÜZ								IV. YARIYIL / BAHAR											
FZK6193	DOKTORA TEZ DANIŞMANLIĞI III	Z	0	1	0	0	1	FZK6194	DOKTORA TEZ DANIŞMANLIĞI IV	Z	0	1	0	0	1				
FZK6183	DOKTORA UZMANLIK ALAN DERSİ III	S	4	0	0	0	5	FZK6184	DOKTORA UZMANLIK ALAN DERSİ IV	S	4	0	0	0	5				
FZK6101	NÜKLEER MANYETİK REZONANS I (ATOM VE MOLEKÜL FİZ.A.B.D. İÇİN)	Z	3	0	0	3	6	FZK6172	SEMİNER	Z	0	2	0	0	4				
FZK6201	ULTRASES(GENEL FİZİK A.B.D. İÇİN)	Z	3	0	0	3	6	FZK6102	NÜKLEER MANYETİK REZONANS II (ATOM VE MOLEKÜL FİZ.A.B.D. İÇİN)	Z	3	0	0	3	6				
FZK6303	KATI MADDELERİN ÖZELLİKLERİ I (KATIHAL FİZİĞİ A.B.D. İÇİN)	Z	3	0	0	3	6	FZK6608	KUANTUMLU ALANLAR TEORİSİ I (YÜK.EN.FİZ.A.B.D İÇİN)	Z	3	0	0	3	6				
FZK6501	İLERİ NÜKLEER FİZİK II (NÜKLEER FİZİK A.B.D.İÇİN)	Z	3	0	0	3	6	FEN6000	ARAŞTIRMA TEKNİKLERİ VE YAYIN ETİĞİ	Z	2	0	0	2	2				
FZK6103	ELEKTRON SPİN REZONANS I	S	3	0	0	3	6	FZK6104	ELEKTROSPİN REZONANS II	S	3	0	0	3	6				
FZK6105	FİZİKSEL OPTİK I	S	3	0	0	3	6	FZK6106	FİZİKSEL OPTİK II	S	3	0	0	3	6				
FZK6107	TERMOLÜMİNESANS VE VERİ ANALİZİ I	S	3	0	0	3	6	FZK6108	TERMOLÜMİNESANS VE VERİ ANALİZİ II	S	3	0	0	3	6				
FZK6109	YÜKSEK ENERJİ GAZ DETEKTÖRLERİN FİZİĞİ II	S	3	0	0	3	6	FZK6110	GENEL RELATİVİTE	S	3	0	0	3	6				

FZK6111	YÜKSEK ENERJİ FİZİĞİNDE HESAPLAMA TEKNİKLERİ II	S	3	0	0	3	6	FZK6112	STANDART MODEL VE ÖTESİ II	S	3	0	0	3	6				
FZK6113	DENEYSSEL PARÇACIK FİZİĞİNDE GAZLI DETEKTÖRLER II	S	3	0	0	3	6	FZK6202	ELEKTRON MİKROSKOPLARI ve UYGULAMALARI	S	2	2	0	3	6				
FZK6203	MADDENİN DIELEKTRİK ÖZELLİKLERİ II	S	3	0	0	3	6	FZK6302	YAPAY SİNİR SİSTEMLERİ	S	3	0	0	3	6				
FZK6301	MANYETİZMADA SAYISAL ÇÖZÜM YÖNTEMLERİ	S	3	0	0	3	6	FZK6304	KATI MADDELERİN ÖZELLİKLERİ II	S	3	0	0	3	6				
FZK6305	X-IŞINLARI ve UYGULAMALARI	S	2	2	0	3	6	FZK6308	MİKROMANYETİZMA II	S	3	0	0	3	6				
FZK6307	MİKROMANYETİZMA I	S	3	0	0	3	6	FZK6310	İLERİ MANYETİK MADDELER II	S	3	0	0	3	6				
FZK6309	İLERİ MANYETİK MADDELER I	S	3	0	0	3	6	FZK6312	NANOFİZİK ve NANOBİLİM	S	3	0	0	3	6				
FZK6311	HETEROEKLEMLER ve METAL-YARIİLETKEN EKLEMLER	S	3	0	0	3	6	FZK6314	YARIİLETKENLERİN OPTİK ÖZELLİKLERİ	S	3	0	0	3	6				
FZK6315	MANYETİK ÇEKİRDEKLER ve ÖZELLİKLERİ I	S	3	0	0	3	6	FZK6316	MANYETİK ÇEKİRDEKLER ve ÖZELLİKLERİ II	S	3	0	0	3	6				
FZK6317	DİYOT LAZERLER I	S	3	0	0	3	6	FZK6318	DİYOT LAZERLER II	S	3	0	0	3	6				
FZK6319	FOTONİK VE LAZERLER	S	3	0	0	3	6	FZK6402	İLERİ KUANTUM MEKANIĞI II	S	3	0	0	3	6				
FZK6401	FİZİKTE MATEMATİK YÖNTEMLER II	S	3	0	0	3	6	FZK6502	NÜKLEER SHELL MODELİ	S	3	0	0	3	6				
FZK6503	İLERİ RADYASYON FİZİĞİ II	S	3	0	0	3	6	FZK6504	NÜKLEER OLAYLAR İÇİN SAYISAL UYGULAMALAR I	S	2	2	0	3	6				
FZK6505	NÜKLEER OLAYLAR İÇİN SAYISAL UYGULAMALAR II	S	3	0	0	3	6	FZK6602	TEMEL PARÇACIKLAR FİZİĞİ II	S	3	0	0	3	6				
FZK6601	ELEKTROZAYIF ETKİLEŞMELER	S	3	0	0	3	6	FZK6604	AYAR TEORİLERİ	S	3	0	0	3	6				
FZK6603	PARÇACIK FİZİĞİNDE LİE CEBRİ	S	3	0	0	3	6	FZK6606	KUANTUM KROMO DİNAMİĞİ	S	3	0	0	3	6				
FZK6605	KUANTUM ELEKTRO DİNAMİĞİ	S	3	0	0	3	6	FZK6610	YÜKSEK ENERJİ DETEKTÖRLERİ II	S	3	0	0	3	6				
FZK6607	HADRON FİZİĞİ ve KUARK MODELİ	S	3	0	0	3	6	FZK6612	YÜKSEK ENERJİ BENZETİŞİM TEKNİKLERİ II	S	3	0	0	3	6				
FZK6609	KUANTUM ALANLAR TEORİSİ II	S	3	0	0	3	6	FZK6614	ORGANİK ELEKTRONİK	S	3	0	0	3	6				
FZK6613	İLERİ KATILAŞMA TEKNİKLERİ	S	3	0	0	3	6												
Toplam Kredi								12	30	Toplam Kredi								11	30
V. YARIYIL / GÜZ								VI. YARIYIL / BAHAR											
FZK6185	DOKTORA UZMANLIK ALAN DERSİ V	Z	4	0	0	0	5	FZK6186	DOKTORA UZMANLIK ALAN DERSİ VI	Z	4	0	0	0	5				
FZK6195	DOKTORA TEZ DANIŞMANLIĞI V	Z	0	0	0	0	15	FZK6196	DOKTORA TEZ DANIŞMANLIĞI VI	Z	0	0	0	0	25				
YET6177	DOKTORA YETERLİLİK SINAVI	Z	0	0	0	0	10												
Toplam Kredi								0	30	Toplam Kredi								0	30
VII. YARIYIL / GÜZ								VIII. YARIYIL / BAHAR											
FZK6187	DOKTORA UZMANLIK ALAN DERSİ VII	Z	4	0	0	0	5	FZK6188	DOKTORA UZMANLIK ALAN DERSİ VIII	Z	4	0	0	0	5				
FZK6197	DOKTORA TEZ DANIŞMANLIĞI VII	Z	0	0	0	0	25	FZK6198	DOKTORA TEZ DANIŞMANLIĞI VIII	Z	0	0	0	0	25				
Toplam Kredi								0	30	Toplam Kredi								0	30
IX. YARIYIL / GÜZ								X. YARIYIL / BAHAR											
FZK6189	DOKTORA UZMANLIK ALAN DERSİ	Z	4	0	0	0	5	FZK6190	DOKTORA UZMANLIK ALAN DERSİ	Z	4	0	0	0	5				
FZK6199	DOKTORA TEZ DANIŞMANLIĞI	Z	0	0	0	0	25	FZK6290	DOKTORA TEZ DANIŞMANLIĞI	Z	0	0	0	0	25				
Toplam Kredi								0	30	Toplam Kredi								0	30
TOPLAM KREDİ:47 - TOPLAM AKTS: 300																			

Not: Öğrenci, seçmeli derslerden her yarıyıl toplam kredilik ders seçecektir. Öğrenci isterse, danışmanının onayı ile her yarıyıl için 1 (bir) seçmeli dersini alan dışından da alabilir.



ULUDAĞ UNIVERSITY
INSTITUTE OF NATURAL SCIENCES
2017-2018 ACADEMIC YEAR COURSE PLAN

DEPARTMENT OF	PHYSICS
DEPARTMENT / PROGRAM	PHYSICS / UNIFIED DOCTORAL PROGRAM

COURSE STAGE	I. TERM / FALL								II. TERM / SPRING							
	Code	Course Title	Type	T	U	L	Credit	ECTS	Code	Course Title	Type	T	U	L	Credit	ECTS
	FZK6191	PHD THESIS CONSULTING I	Z	0	1	0	0	1	FZK6192	PHD THESIS CONSULTING II	Z	0	1	0	0	1
	FZK6181	ADVANCED TOPICS IN PHD THESIS I	S	4	0	0	0	5	FZK6182	ADVANCED TOPICS IN PHD THESIS II	S	4	0	0	0	5
	PHYS5403	ADVANCED QUANTUM MECHANICS I	Z	3	0	0	3	6	PHYS 5102	MULTIPLE LAYER STRUCTURE OF RESONANCE LINE IN LIQUIDS	S	3	0	0	3	6
	PHYS5101	EXPERIMENTAL TECHNIQUES AND MEASUREMENTS IN MR	S	2	2	0	3	6	PHYS5104	MAGNETIC RESONANCE IMAGING	S	3	0	0	3	6
	PHYS5103	SPECTROSCOPIC METHODS	S	3	0	0	3	6	PHYS5106	ELECTRO-OPTIC	S	3	0	0	3	6
	PHYS5105	PHOTODETECTORS	S	3	0	0	3	6	PHYS5108	MOLECULAR PHYSICS II	S	3	0	0	3	6
	PHYS5107	ADVANCED ATOMIC PHYSICS I	S	3	0	0	3	6	PHYS5110	HIGH ENERGY GAS CHAMBER PHYSICS I	S	3	0	0	3	6
	PHYS5109	MOLECULAR PHYSICS I	S	3	0	0	3	6	PHYS5112	COMPUTER BASED INSTRUMENTATION II	S	3	0	0	3	6
	PHYS5111	DOSEMETRIC MATERIALS	S	3	0	0	3	6	PHYS5114	DATA ANALYSIS WITH OBJECT ORIENTED PROGRAMMING I	S	3	0	0	3	6
	PHYS5113	LUMINESCENCE TYPES AND APPLICATION AREAS	S	3	0	0	3	6	PHYS5202	INTERNET PROGRAMMING II	S	2	2	0	3	6
	PHYS 5201	DIELECTRIC PROPERTIES OF MATERIALS I	S	3	0	0	3	6	PHYS5204	COMPUTATIONAL TECHNIQUES IN HIGH ENERGY PHYSICS I	S	3	0	0	3	6
	PHYS 5203	INTERNET PROGRAMMING I	S	2	2	0	3	6	PHYS5206	RELATIVISTIC QUANTUM MECHANICS II	S	3	0	0	3	6
	PHYS 5205	OBJECT ORIENTED DATA ANALYSIS TO PYTHON PROGRAMMING	S	3	0	0	3	6	PHYS5302	STRUCTURE OF MAGNETIC MATERIALS	S	3	0	0	3	6
	PHYS 5207	COMPUTER BASED INSTRUMENTATION I	S	3	0	0	3	6	PHYS5304	ADVANCED SOLID STATE II	S	3	0	0	3	6
	PHYS 5209	RELATIVISTIC QUANTUM MECHANICS I	S	3	0	0	3	6	PHYS5306	ADVANCED MAGNETISM I	S	3	0	0	3	6
	PHYS 5211	BEYOND THE STANDARD MODEL I	S	3	0	0	3	6	PHYS5308	SURFACE OXIDE FILMS AND THEIR TECHNOLOGIES	S	3	0	0	3	6
	PHYS 5213	GAS DETECTORS IN EXPERIMENTAL PARTICLE PHYSICS I	S	3	0	0	3	6	PHYS5310	SUPERCONDUCTORS I	S	3	0	0	3	6
	PHYS 5301	MAGNETIC PROPERTIES OF MATERIALS	S	3	0	0	3	6	PHYS5312	PHYSICS OF SEMICONDUCTOR DEVICES I	S	3	0	0	3	6
	PHYS 5303	ADVANCED SOLID STATE PHYSICS I	S	3	0	0	3	6	PHYS5314	PHYSICS OF SEMICONDUCTORS I	S	3	0	0	3	6
	PHYS 5307	ADVANCED MAGNETISM II	S	3	0	0	3	6	PHYS5316	MAGNETIC THIN FILMS	S	3	0	0	3	6
	PHYS 5309	ELECTROCHEMICAL METHODS	S	3	0	0	3	6	PHYS5318	MAGNETIC DOMAINS	S	3	0	0	3	6
	PHYS 5311	SUPERCONDUCTIVITY II	S	3	0	0	3	6	PHYS5320	SURFACE PHYSICS AND ANALYSIS TECHNIQUES	S	3	0	0	3	6
	PHYS 5313	PHYSICS OF SEMICONDUCTOR DEVICES II	S	3	0	0	3	6	PHYS5324	NANOTECHNOLOGY	S	3	0	0	3	6
	PHYS 5315	PHYSICS OF SEMICONDUCTORS II	S	3	0	0	3	6	PHYS5326	X-RAY DIFFRACTIONS	S	3	0	0	3	6
	PHYS 5317	QUANTUM THEORY OF SOLIDS	S	3	0	0	3	6	PHYS5402	ELECTROMAGNETIC THEORY	S	3	0	0	3	6
	PHYS 5319	MAGNETIC LOSSES	S	3	0	0	3	6	PHYS5404	NUMERICAL ANALYSIS METHODS IN	S	2	2	0	3	6

PHYS 5321	MEASUREMENTTECHNIQUES IN PHYSİCS	S	3	0	0	3	6	PHYS5502	ADVANCED NUCLEARSPECTROSCOPY II	S	3	0	0	3	6				
PHYS 5401	MATHEMATİCAL METHODS IN PHYSİCS I	S	3	0	0	3	6	PHYS5504	NUCLEARRADIATIONDETECTION	S	3	0	0	3	6				
PHYS 5405	ADVANCED THEORETİCALMECHANİCS	S	3	0	0	3	6	PHYS5506	ADVANCED NEUTRONPHYSİCS I	S	3	0	0	3	6				
PHYS 5501	ADVANCED NUCLEARSPECTROSCOPY I	S	3	0	0	3	6	PHYS5508	NUCLEARAFFECTIONS	S	3	0	0	3	6				
PHYS 5503	ADVANCED NUCLEARPHYSİCS I	S	3	0	0	3	6	PHYS5512	SAMPLİNGTECHNIQUES IN NUCLEARPHYSİCS II	S	3	0	0	3	6				
PHYS 5505	NUCLEARMODELS	S	3	0	0	3	6	PHYS5514	APLİCATION OF ADVANCED MİCROSCOPY	S	3	0	0	3	6				
PHYS 5507	ADVANCED NEUTRONPHYSİCS II	S	3	0	0	3	6	PHYS5602	GRAND UNİFİEDTHEORIES	S	3	0	0	3	6				
PHYS 5509	ADVANCED RADIATIONPHYSİCS I	S	3	0	0	3	6	PHYS5604	CHARGEDPARTİCLESPHYSİCS	S	3	0	0	3	6				
PHYS 5511	SAMPLİNGTECHNIQUES IN NUCLEARPHYSİCS I	S	3	0	0	3	6	PHYS5606	HİGH ENERGYDETECTORS I	S	3	0	0	3	6				
PHYS 5513	ADVANCED MİCROSCOPY	S	3	0	0	3	6	PHYS5608	HİGH ENERGYSİMULATIONTECHNIQUES I	S	3	0	0	3	6				
PHYS 5601	ELEMENTARYSCATTERİNGTHEORY	S	3	0	0	3	6	PHYS5612	ADVANCED OPTİCS II	S	3	0	0	3	6				
PHYS 5603	ELEMENTARYPARTİCLESPHYSİCS I	S	3	0	0	3	6	PHYS5614	PHYSİCS OF THİN FİLM	S	3	0	0	3	6				
PHYS 5605	SYMMETRIESANDCLASSİFICATION OF PARTİCLES	S	3	0	0	3	6												
PHYS 5607	İNTRODUCTIONTO ACCELERATOR PHYSİCS	S	3	0	0	3	6												
PHYS5609	ADVANCED OPTİCS I	S	3	0	0	3	6												
PHYS5611	SOLAR ENERGY	S	3	0	0	3	6												
PHYS5613	COATINGTECHNİGUES	S	3	0	0	3	6												
Toplam Kredi								12	30	Toplam Kredi								12	30
III. TERM / FALL								IV. TERM / SPRING											
FZK6193	PHD THESIS CONSULTING III	Z	0	1	0	0	1	FZK6194	PHD THESIS CONSULTING IV	Z	0	1	0	0	1				
FZK6183	ADVANCED TOPICS IN PHD THESIS III	S	4	0	0	0	5	FZK6184	ADVANCED TOPICS IN PHD THESIS IV	S	4	0	0	0	5				
PHSY6101	NUCLEARMAGNETİCRESONANCE I(ATOM VE MOLEKÜL FİZ.A.B.D. İÇİN)	Z	3	0	0	3	6	FZK6172	SEMINAR	Z	0	2	0	0	4				
PHSY6201	ULTRASOUND(GENEL FİZ.A.B.D.İÇİN)	Z	3	0	0	3	6	PHSY6102	NUCLEARMAGNETİCRESONANCE II (ATOM VE MOLEKÜL FİZİĞİ A.B.D.İÇİN)	Z	3	0	0	3	6				
PHSY6303	PROPERTIES OF SOLID MATERIALS I(KATIHALFİZ.A.B.D.İÇİN)	Z	3	0	0	3	6	PHSY6608	QUANTUMFIELDTHEORY I (YÜK.EN.FİZ.A.B.D İÇİN)	Z	3	0	0	3	6				
PHSY6501	ADVANCED NUCLEARPHYSİCS II(NÜKLEER FİZ.A.B.D. İÇİN)	Z	3	0	0	3	6	FEN6000	RESEARCH TECHNIQUES and PUBLICATION ETHICS	C	2	0	0	2	2				
								PHYS6182	ADVANCED TOPİCSINPHDTHESIS II	S	4	0	0	0	5				
								PHSY6104	ELECTRON SPİN RESONANCE II	S	3	0	0	3	6				
PHSY6103	ELECTRON SPİN RESONANCE I	S	3	0	0	3	6	PHSY6106	PHYSİCAL OPTİCS II	S	3	0	0	3	6				
PHSY6105	PHYSİCAL OPTİCS I	S	3	0	0	3	6	PHSY6108	THERMOLÜMİNESCENCE AND DATA ANALYSİS II	S	3	0	0	3	6				
PHSY6107	THERMOLÜMİNESCENCE AND DATA ANALYSİS I	S	3	0	0	3	6	PHSY6110	GENERAL RELATİVİTY	S	3	0	0	3	6				

	PHYS6109	HIGH ENERGY GAS CHAMBER PHYSICS II	S	3	0	0	3	6	PHSY6112	BEYOND THE STANDARD MODEL II	S	3	0	0	3	6				
	PHYS6111	COMPUTATIONAL TECHNIQUES IN HIGH ENERGY PHYSICS II	S	3	0	0	3	6	PHSY6202	ELECTRONMICROSCOPESAND APPLICATIONS	S	2	2	0	3	6				
	PHYS6113	GAS DETECTORS IN EXPERIMENTAL PARTICLE PHYSICS II	S	3	0	0	3	6	PHSY6302	ARTIFICIALNEURAL NETWORK	S	3	0	0	3	6				
	PHSY6203	DIELECTRICPROPERTIES OF MATERIALS II	S	3	0	0	3	6	PHSY6304	PROPERTIES OF SOLID MATERIALS II	S	3	0	0	3	6				
	PHSY6301	NUMERICAL ANALYSIS METHODS IN MAGNETISM	S	3	0	0	3	6	PHSY6308	MICROMAGNETISM II	S	3	0	0	3	6				
	PHSY6305	X-RAYSAND APPLICATIONS	S	2	2	0	3	6	PHSY6310	ADVANCED MAGNETICMATERIALS II	S	3	0	0	3	6				
	PHSY6307	MICROMAGNETISM I	S	3	0	0	3	6	PHSY6312	NANOPHYSICSANDNANOSCIENCE	S	3	0	0	3	6				
	PHSY6309	ADVANCED MAGNETICMATERIAL I	S	3	0	0	3	6	PHSY6314	OPTICAL PROPERTIES OF SEMICONDUCTORS	S	3	0	0	3	6				
	PHSY6311	HETEROJUNCTIONSAND METAL-SEMICONDUKTORJUNCTIONS	S	3	0	0	3	6	PHSY6316	MAGNETICCORESANDPROPERTIES II	S	3	0	0	3	6				
	PHSY6315	MAGNETICCORESANDPROPERTIES I	S	3	0	0	3	6	PHSY6318	DIODELASERS II	S	3	0	0	3	6				
	PHSY6317	DIODELASERS I	S	3	0	0	3	6	PHSY6402	ADVANCED QUANTUM MECHANICS II	S	3	0	0	3	6				
	PHSY6319	PHOTONICSANDLASERS	S	3	0	0	3	6	PHSY6502	NUCLEAR SHELL MODEL	S	3	0	0	3	6				
	PHSY6401	MATHEMATICAL METHODS IN PHYSICS II	S	3	0	0	3	6	PHSY6504	NUMERICAL APPLICATIONS FORNUCLEAREVENTS I	S	2	2	0	3	6				
	PHSY6503	ADVANCED RADIATIONPHYSICS II	S	3	0	0	3	6	PHSY6602	ELEMENTARYPARTICLES PHYSICS II	S	3	0	0	3	6				
	PHSY6505	NUMERICAL APPLICATIONS FORNUCLEAREVENTS II	S	3	0	0	3	6	PHSY6604	GAUGETHEORIES	S	3	0	0	3	6				
	PHSY6601	ELECTROWEAKINTERACTIONS	S	3	0	0	3	6	PHSY6606	QUANTUM CHROMODYNAMICS	S	3	0	0	3	6				
	PHSY6603	LIEALGEBRA IN PARTICLEPHYSICS	S	3	0	0	3	6	PHSY6610	HIGH ENERGYDETECTORS II	S	3	0	0	3	6				
	PHSY6605	QUANTUM ELECTRODYNAMICS	S	3	0	0	3	6	PHSY6612	HIGH ENERGYSIMULATIONTECHNIQUES II	S	3	0	0	3	6				
	PHSY6607	HADRONPHYSICSANDQUARK MODEL	S	3	0	0	3	6	PHSY6614	ORGANIC ELECTRONIC	S	3	0	0	3	6				
	PHSY6609	QUANTUM FIELDTHEORY II	S	3	0	0	3	6												
	PHSY6613	ADVANCED SOLIDIFICATION TECHNIQUES	S	3	0	0	3	6												
	Toplam Kredi								12	30	Toplam Kredi								11	30
STAGE THESIS	V. TERM / FALL									VI. TERM / SPRING										
	FZK6185	ADVANCED TOPICS IN PHD THESIS V	Z	4	0	0	0	5	FZK6186	ADVANCED TOPICS IN PHD THESIS VI	Z	4	0	0	0	5				
	FZK6195	PHD THESIS CONSULTING V	Z	0	0	0	0	15	FZK6196	PHD THESIS CONSULTING VI	Z	0	0	0	0	25				
	FZK6177	PHD PROFICIENCY EXAMINATION	Z	0	0	0	0	10												
	Toplam Kredi								0	30	Toplam Kredi								0	30
	VII. TERM / FALL									VIII. TERM / SPRING										
	FZK6187	ADVANCED TOPICS IN PHD THESIS VII	Z	4	0	0	0	5	FZK6188	ADVANCED TOPICS IN PHD THESIS VIII	Z	3	0	0	0	5				
	FZK6197	PHD THESIS CONSUTING VII	Z	0	0	0	0	25	FZK6198	PHD THESIS CONSULTING VIII	Z	0	0	0	0	25				
	Toplam Kredi								0	30	Toplam Kredi								0	30
	IX. TERM / FALL									X. TERM / SPRING										
FZK6189	ADVANCED TOPICS IN PHD THESIS	Z	4	0	0	0	5	FZK6190	ADVANCED TOPICS IN PHD THESIS	Z	3	0	0	0	5					

FZK6199	PHD THESIS CONSSULTING	Z	0	0	0	0	25	FZK6290	PHD THESIS CONSULTING	Z	0	0	0	0	25								
Toplam Kredi								0								30							
Toplam Kredi								0								30							
TOTAL CREDITS:47 - TOTAL ECTS: 300																							

Not: The student is expected to take a total of credited selective courses every academic term.

The student have the option of choosing one selective course from another department with the endorsement of the supervisor. *Success in Ph.D. qualifying exam is a prerequisite.



