ELECTRICAL AND ELECTRONICS ENGINEERING

Course Catalogue

2016

Eskişehir Osmangazi University Electrical and Electronics Engineering Department was founded in 1980 as a part of Eskişehir Academy of Engineering and Architecture. In 1982, following the establishment of Anadolu University, the department was joined College of Engineering and Architecture of Anadolu University. Due to the extensive growth of Anadolu University, several colleges and departments including the Electrical and Electronics Engineering Department were separated from Anadolu University to form Osmangazi University in 1993.

The instruction in the Electrical and Electronics Engineering Department has been in English since the beginning of 1993-1994 academic year.

The Department currently has sixteen full-time faculty members. Also, faculty members from other departments, colleges and universities teach classes in the Department in the fields of their expertice.

The Instruction in the Department is in English. Entering students take a year-long full-time intensive English course if they are not fluent in English before they start taking classes for the B.S. in Electrical-Electronics Engineering degree program. International students can submit TOEFL or other scores.

The senior year courses are mostly technical electives. These courses may be grouped into five fields: Computer, Electronics, Communications, Control Systems, and Power Systems.

Electrical-Electronics Engineering Department has Master's of Science and Doctoral (Ph.D) graduate programs, too,

The EE department has contributed hundreds of engineers to the industry. These engineers are employed by private industries as well as government companies within the country as well as worldwide.

The Department undergraduate curriculum had been prepared to meet ABET criteria since the the year the medium of instruction was changed to English. The Electrical Electronics Engineering pogram is accredited by the Association for Evaluation and Accreditation of Engineering Programs (MÜDEK) for the period 2012-2014 and 2014-2017.

ELECTRICAL AND ELECTRONICS ENGINEERING

Curriculums

- Students who started EEE program in or after 2015
- Students who started EEE program in 2014
- Students who started EEE program between 2010-2013

2016

Eskişehir Osmangazi University
Electrical-Electronics Engineering Department
2015 Program of Study

TOTAL		**140**	**34**	**153**	**240**
Course Code	**Course Title**	**T**	**P**	**Crd**	**ECTS**
Semester # 1	**Freshman Year Fall**	**20**	**6**	**21**	**29**
151221201	ATATÜRK İLKE.VE İNK.TARİHİ I	2	0	2	2
151221202	CALCULUS I	4	0	4	5
151221195	CHEMISTRY	3	0	3	3
151221132	EXPOSITORY WRITING	3	0	3	4
151221203	INTRODUCTION TO PROGRAMMING	2	2	3	5
151221198	PHYSICS I	3	0	3	3
151221199	PHYSICS I LAB.	0	2	1	2
151221181	TÜRK DİLİ I	2	0	0	2
151221204	INT.TO ELECTRICAL&ELECTRONICS ENG.	1	2	2	3
Semester # 2	**Freshman Year Spring**	**20**	**6**	**21**	**31**
151222200	ATATÜRK İLKE.VE İNK.TARİHİ II	2	0	2	2
151222201	CALCULUS II	4	0	4	5
151222137	COMPUTER PROGRAMMING	2	2	3	5
151222126	ENGINEERING GRAPHICS	1	2	2	4
151222148	LINEAR ALGEBRA	3	0	3	4
151222198	PHYSICS II	3	0	3	3
151222199	PHYSICS II LAB	0	2	1	2
151222136	TECHNICAL WRITING	3	0	3	4
151222182	TÜRK DİLİ II	2	0	0	2
Semester # 3	**Sophomore Year Fall**	**18**	**2**	**19**	**31**
151223559	ADVANCED CALCULUS	4	0	4	7
151223555	CIRCUIT ANALYSIS I	4	0	4	6
151223556	CIRCUITS LABORATORY	0	2	1	2
151223557	DIGITAL SYSTEMS I	4	0	4	7
151223558	ELECTROMAGNETICS I	3	0	3	5
	Non-Technical Elective	3	0	3	4
Semester # 4	**Sophomore Year Spring**	**17**	**2**	**18**	**29**
151224232	CIRCUIT ANALYSIS II	4	0	4	6
151224555	DIGITAL SYSTEMS II	4	0	4	7
151224298	DIGITAL SYSTEMS LAB.	0	2	1	2
151224556	ELECTROMAGNETICS II	3	0	3	5
151224299	SYSTEMS AND SIGNALS	3	0	3	5
	Non-Technical Elective	3	0	3	4
Semester # 5	**Junior Year Fall**	**18**	**4**	**20**	**30**
151225335	ELECTRONICS I	3	0	3	5
151226357	ELECTRONICS LABORATORY	0	2	1	2
151225399	ENGINEERING MECHANICS	3	0	3	3
151225405	INTRODUCTION TO MICROCOMPUTERS	3	0	3	5
151225350	NUMERICAL METHODS	3	0	3	5
151225394	PROBABILITY	3	0	3	4
151225406	MICROCOMPUTER LABORATORY	0	2	1	2
	Non-Technical Elective	3	0	3	4
Semester # 6	**Junior Year Spring**	**16**	**4**	**18**	**30**
151226374	COMMUNICATIONS	3	0	3	5
151226367	COMMUNICATIONS LABORATORY	0	2	1	2
151226364	CONTROL SYSTEMS LABORATORY	0	2	1	2
151226366	ELECTRONICS II	3	0	3	5
151226373	FUNDAMENTALS OF CONTROL SYSTEMS	3	0	3	5
151226375	PRINCIPLES OF ENERGY CONVERSION	3	0	3	5

151226377	FUNDAMENTALS OF OCCUPATIONAL HEALTH AND SAFETY	2	0	2	3
151226376	INTRODUCTION TO PROJECT MANAGEMENT	2	0	2	3
Semester # 7	**Senior Year Fall**	**18**	**2**	**19**	**30**
151227437	ECONOMICS	3	0	3	4
	Non-Technical Elective	3	0	3	4
	Technical Elective I	3	0	3	5
	Technical Elective I	3	0	3	5
	Technical Elective I	3	0	3	5
151227644	DESIGN PROCESSES	1	2	2	4
151227643	OCCUPATIONAL HEALTH AND SAFETY IN ELECTRICAL ENGINEERING	2	0	2	3
Semester # 8	**Senior Year Spring**	**13**	**8**	**17**	**30**
151228539	ELECTRICAL ENGINEERING DESIGN	2	4	4	9
151228548	THE ENGINEER AND SOCIETY	2	0	2	2
	Technical Elective I	3	0	3	5
	Technical Elective III	3	2	4	7
	Technical Elective III	3	2	4	7

Eskişehir Osmangazi University
Electrical-Electronics Engineering Department
2014 Program of Study

TOTAL		140	32	152	240
Course Code	**Course Title**	**T**	**P**	**Crd**	**ECTS**
Semester # 1	**Freshman Year Fall**	**20**	**6**	**21**	**29**
151221201	ATATÜRK İLKE.VE İNK.TARİHİ I	2	0	2	2
151221202	CALCULUS I	4	0	4	5
151221195	CHEMISTRY	3	0	3	3
151221132	EXPOSITORY WRITING	3	0	3	4
151221203	INTRODUCTION TO PROGRAMMING	2	2	3	5
151221198	PHYSICS I	3	0	3	3
151221199	PHYSICS I LAB.	0	2	1	2
151221181	TÜRK DİLİ I	2	0	0	2
151221204	INT.TO ELECTRICAL&ELECTRONICS ENG.	1	2	2	3
Semester # 2	**Freshman Year Spring**	**20**	**6**	**21**	**31**
151222200	ATATÜRK İLKE.VE İNK.TARİHİ II	2	0	2	2
151222201	CALCULUS II	4	0	4	5
151222137	COMPUTER PROGRAMMING	2	2	3	5
151222126	ENGINEERING GRAPHICS	1	2	2	4
151222148	LINEAR ALGEBRA	3	0	3	4
151222198	PHYSICS II	3	0	3	3
151222199	PHYSICS II LAB	0	2	1	2
151222136	TECHNICAL WRITING	3	0	3	4
151222182	TÜRK DİLİ II	2	0	0	2
Semester # 3	**Sophomore Year Fall**	**18**	**2**	**19**	**31**
151223559	ADVANCED CALCULUS	4	0	4	7
151223555	CIRCUIT ANALYSIS I	4	0	4	6
151223556	CIRCUITS LABORATORY	0	2	1	2
151223557	DIGITAL SYSTEMS I	4	0	4	7
151223558	ELECTROMAGNETICS I	3	0	3	5
	Non-Technical Elective	3	0	3	4
Semester # 4	**Sophomore Year Spring**	**17**	**2**	**18**	**29**
151224232	CIRCUIT ANALYSIS II	4	0	4	6
151224555	DIGITAL SYSTEMS II	4	0	4	7
151224298	DIGITAL SYSTEMS LAB.	0	2	1	2
151224556	ELECTROMAGNETICS II	3	0	3	5
15122429	SYSTEMS AND SIGNALS	3	0	3	5
	Non-Technical Elective	3	0	3	4
Semester # 5	**Junior Year Fall**	**18**	**4**	**20**	**30**
151225335	ELECTRONICS I	3	0	3	5
151226357	ELECTRONICS LABORATORY	0	2	1	2
151225399	ENGINEERING MECHANICS	3	0	3	3
151225405	INTRODUCTION TO MICROCOMPUTERS	3	0	3	5
151225350	NUMERICAL METHODS	3	0	3	5
151225394	PROBABILITY	3	0	3	4
151225406	MICROCOMPUTER LABORATORY	0	2	1	2
	Non-Technical Elective	3	0	3	4
Semester # 6	**Junior Year Spring**	**16**	**4**	**18**	**30**
151226356	COMMUNICATIONS	3	0	3	6
151226367	COMMUNICATIONS LABORATORY	0	2	1	2
151226364	CONTROL SYSTEMS LABORATORY	0	2	1	2
151226366	ELECTRONICS II	3	0	3	5

151226373	FUNDAMENTALS OF CONTROL SYSTEMS	3	0	3	5
151226361	PRINCIPLES OF ENERGY CONVERSION	4	0	4	6
	Non-Technical Elective	3	0	3	4
Semester # 7	**Senior Year Fall**	**17**	**2**	**18**	**30**
151227629	INTRODUCTION TO PROJECT MANAGEMENT	2	0	2	5
151227437	ECONOMICS	3	0	3	4
	Non-Technical Elective	3	0	3	4
	Technical Elective I	3	0	3	5
	Technical Elective I	3	0	3	5
	Technical Elective I	3	0	3	5
	Technical Elective II	0	2	1	2
Semester # 8	**Senior Year Spring**	**14**	**6**	**17**	**30**
151228539	ELECTRICAL ENGINEERING DESIGN	2	4	4	9
151228538	THE ENGINEER AND SOCIETY	3	0	3	4
	Technical Elective I	3	0	3	5
	Technical Elective I	3	0	3	5
	Technical Elective I	3	0	3	5
	Technical Elective II	0	2	1	2

Eskişehir Osmangazi University
Electrical-Electronics Engineering Department
2010 Program of Study

TOTAL		**140**	**34**	**149**	**241**
Course Code	**Course Title**	**T**	**P**	**Crd**	**ECTS**
Semester # 1	**Freshman Year Fall**	**20**	**8**	**19**	**29**
151221201	ATATÜRK İLKE.VE İNK.TARİHİ I	2	0	2	2
151221197	CALCULUS I	3	2	4	5
151221195	CHEMISTRY	3	0	3	3
151221196	CHEMISTRY LAB	0	2	1	2
151221132	EXPOSITORY WRITING	3	0	3	4
151221200	INTRODUCTION TO COMPUTERS	1	2	0	2
151221113	INTRODUCTION TO PROGRAMMING	2	0	2	3
151221198	PHYSICS I	3	0	3	3
151221199	PHYSICS I LAB.	0	2	1	2
151221181	TÜRK DİLİ I	2	0	0	2
151221148	INTRODUCTION TO ELECTRICAL ENGINEERING I	1	0	0	1
Semester # 2	**Freshman Year Spring**	**20**	**8**	**21**	**32**
151222200	ATATÜRK İLKE.VE İNK.TARİHİ II	2	0	2	2
151222197	CALCULUS II	3	2	4	5
151222137	COMPUTER PROGRAMMING	2	2	3	5
151222126	ENGINEERING GRAPHICS	1	2	2	4
151222148	LINEAR ALGEBRA	3	0	3	4
151222198	PHYSICS II	3	0	3	3
151222199	PHYSICS II LAB	0	2	1	2
151222136	TECHNICAL WRITING	3	0	3	4
151222182	TÜRK DİLİ II	2	0	0	2
151222149	INTRODUCTION TO ELECTRICAL ENGINEERING II	1	0	0	1
Semester # 3	**Sophomore Year Fall**	**18**	**2**	**19**	**31**
151223559	ADVANCED CALCULUS	4	0	4	7
151223555	CIRCUIT ANALYSIS I	4	0	4	6
151223556	CIRCUITS LABORATORY	0	2	1	2
151223557	DIGITAL SYSTEMS I	4	0	4	7
151223558	ELECTROMAGNETICS I	3	0	3	5
	Non-Technical Elective	3	0	3	4
Semester # 4	**Sophomore Year Spring**	**17**	**2**	**18**	**29**
151224232	CIRCUIT ANALYSIS II	4	0	4	6
151224555	DIGITAL SYSTEMS II	4	0	4	7
151224298	DIGITAL SYSTEMS LAB.	0	2	1	2
151224556	ELECTROMAGNETICS II	3	0	3	5
15122429	SYSTEMS AND SIGNALS	3	0	3	5
	Non-Technical Elective	3	0	3	4
Semester # 5	**Junior Year Fall**	**18**	**2**	**19**	**29**
151225335	ELECTRONICS I	3	0	3	5
151226357	ELECTRONICS LABORATORY	0	2	1	2
151225399	ENGINEERING MECHANICS	3	0	3	3
151225393	INTRODUCTION TO MICROCOMPUTERS	3	0	3	6
151225350	NUMERICAL METHODS	3	0	3	5
151225394	PROBABILITY	3	0	3	4
	Non-Technical Elective	3	0	3	4

Semester # 6	Junior Year Spring	16	4	18	31
151226349	COMMUNICATIONS	3	0	3	6
151226367	COMMUNICATIONS LABORATORY	0	2	1	2
151226364	CONTROL SYSTEMS LABORATORY	0	2	1	2
151226366	ELECTRONICS II	3	0	3	5
151226363	FUNDAMENTALS OF CONTROL SYSTEMS	3	0	3	6
151226361	PRINCIPLES OF ENERGY CONVERSION	4	0	4	6
	Non-Technical Elective	3	0	3	4
Semester # 7	**Senior Year Fall**	**17**	**2**	**18**	**30**
151227629	INTRODUCTION TO PROJECT MANAGEMENT	2	0	2	5
151227437	ECONOMICS	3	0	3	4
	Non-Technical Elective	3	0	3	4
	Technical Elective I	3	0	3	5
	Technical Elective I	3	0	3	5
	Technical Elective I	3	0	3	5
	Technical Elective II	0	2	1	2
Semester # 8	**Senior Year Spring**	**14**	**6**	**17**	**30**
151228539	ELECTRICAL ENGINEERING DESIGN	2	4	4	9
151228538	THE ENGINEER AND SOCIETY	3	0	3	4
	Technical Elective I	3	0	3	5
	Technical Elective I	3	0	3	5
	Technical Elective I	3	0	3	5
	Technical Elective II	0	2	1	2

ELECTRICAL AND ELECTRONICS ENGINEERING

Course Information Forms

Note: Course codes, credits and ECTS values of courses in different curricula may be different. For this reason, check out that the course code, credit and ECTS in the Course Information Form are the same as your curriculum.

2016

ESOGÜ Elektrik-Elektronik Mühendisliği Bölümü Ders Bilgi Formu

DERSİN KODU: 151221201 **DERSİN ADI:** Atatürk İlkeleri ve İnkılâp Tarihi I

YARIYIL	HAFTALIK DERS SAATİ		DERSİN			
	Teorik	Uygulama	Kredisi	AKTS	TÜRÜ	Language
1	2	0	2	2	ZORUNLU (x) SEÇMELİ ( )	Turkish (x) English ()

Dersin kredisini (kredisiz derslerde haftalık saatini) aşağıya işleyiniz (Gerekli görüyorsanız paylaştırınız.).

Matematik ve Temel Bilimler	Mesleki Konular [Önemli düzeyde tasarım içeriyorsa (√) koyunuz.]	Genel Eğitim	Sosyal
	( )		

ÖLÇME- DEĞERLENDİRME ETKİNLİKLERİ	TEORİK- UYGULAMALI DERSLER			LABORATUVAR DERSLERİ		
	Faaliyet türü	Sayı	%	Faaliyet türü	Sayı	%
YARIYIL İÇİ	Ara Sınav	1	40	Kısa Sınav		
	Kısa Sınav			Deneyin Yapılışı		
	Ödev			Rapor		
	Proje			Rapor Sözlüsü		
	Diğer (……)			Diğer (……)		
YARIYIL SONU SINAVI		1	60			
MAZERET SINAVI (Sözlü/Yazılı)						

VARSA ÖNERİLEN ÖNKOŞUL(LAR)	
DERSİN KISA İÇERİĞİ	Tarih açısından Türk Devriminin temellerini, Türk devrimin tarihi gelişimi, zaman dizinsel eksende karşılaştırmalı olarak ele alınarak, Tam bağımsızlık ve Ulusal egemenlik kavramlarını irdelemekte, verilen savaşım genç bireylere aktarılmaktadır.
DERSİN AMAÇLARI	Öğrencilerin, Atatürk ilke ve devrimlerine bağlı, laik, demokratik ve çağdaş değerleri benimseyen ve koruyan bireyler olarak yetişmelerini sağlamak. Bu ders boyunca öğrencilere, demokrasinin çağımızın en iyi yaşam tarzı olduğu kavratılır, demokrasinin korunması ve geliştirilmesi bilinci kazandırılır.
DERSİN MESLEK EĞİTİMİNİ SAĞLAMAYA YÖNELİK KATKISI	Kişilik gelişimini tamamlama sürecinde tam bağımsızlık ve ulusal egemenlik kavramları ile bilinçlenme işleminin tamamlanmaktadır. Dersin genel anlamda, kendini gerçekleştiren, kültürlü, gündeme duyarlı olan eleştirel yaklaşımı benimsemiş, yapıcı ve çözüm odaklı birey oluşturma sürecinde katkısı gözlenmiştir
DERSİN ÖĞRENİM ÇIKTILARI	Sosyal bilimlere ilişkin bilgilerini uygulama becerisi Verileri analiz edebilme, değerlendirebilme ve tasarlama becerisi Disiplinler arası bir takıma liderlik edebilme becerisi Yaşama karşılaştırmalı bakabilme becerisi, mesleki ve etik sorumluluğu anlama, etkin yazılı ve sözlü iletişim becerisi Verilerin ulusal ve küresel tesiri ile sonuçlarını anlama becerisi Hayat boyu öğrenimin önemini kavrama ve uygulama becerisi Mesleki güncel konuları izleme becerisi Bağımsız ya da danışman yönetiminde bilimsel araştırma yapabilme becerisi
TEMEL DERS KİTABI	Gazi Mustafa Kemal Atatürk, Nutuk (Söylev), C. I-II, TTK., Ankara, 1986. İmparatorluktan Ulus Devlete Türk İnkılâp Tarihi, Cemil Öztürk (ed.), Ank., 2011.
YARDIMCI KAYNAKLAR	Niyazi Berkes, Türkiye'de Çağdaşlaşma, İstanbul, 1978. Enver Ziya Karal, Atatürk ve Devrim (Konferanslar ve Makaleler), TTK., Ankara, 1980. Enver Ziya Karal, Atatürk'ten Düşünceler, MEB. Yay., Ankara, 1981. Bernard Lewis, Modern Türkiye'nin Doğuşu, Çev.M.Kıratlı, TTK., Ankara, 1970. Ahmet Mumcu, Tarih Açısından Türk Devriminin Temelleri ve Gelişimi, Ankara, 1976.
DERSTE GEREKLİ ARAÇ VE GEREÇLER	Projeksiyon Makinesi, Harita, Fotoğraf, İstatistikî Tablolar, Grafikler

DERSİN HAFTALIK PLANI	
HAFTA	**İŞLENEN KONULAR**
1	Atatürk İlkeleri ve İnkılâp Tarihi dersini okutmanın amacı ve İnkılâp kavramı
2	Osmanlı İmparatorluğu'nun Yıkılışını ve Türk inkılâbını Hazırlayan Sebeplere Toplu Bakış
3	Osmanlı İmparatorluğu'nun Parçalanması (Trablusgarp, Balkan Savaşları ve Birinci Dünya Savaşı)
4	Mondros Ateşkes Antlaşması
5	İşgaller Karşısında Memleketin Durumu ve Mustafa Kemal Paşa'nın Tepkisi
6	Mustafa Kemal Paşa'nın Samsun'a Çıkışı, Milli Mücadele İçin İlk Adım, Kongreler Yolu İle Teşkilatlanma
7	Kuva-yı Milliye ve Misak-ı Milli
8	Ara sınav
9	Ara sınav
10	Türkiye Büyük Millet Meclisi'nin Açılması
11	Türkiye Büyük Millet Meclisi'nin İstiklal Savaşı'nın Yönetimini ele alması
12	Sakarya Zaferine Kadar Milli Mücadele; Eğitim ve Kültür Alanında Milli Mücadele
13	Sakarya Savaşı ve Büyük Taarruz
14	Mudanya'dan Lozan'a
15,16	Yarıyıl sonu sınavı

NO	PROGRAM ÇIKTISI	4	3	2	1
1	Matematik, fen bilimleri ve Elektrik-Elektronik Mühendisliği konularında yeterli bilgi birikimi; bu alanlardaki kuramsal ve uygulamalı bilgileri Elektrik-Elektronik Mühendisliği problemlerini modelleme ve çözme için uygulayabilme becerisi.				X
2	Elektrik-Elektronik Mühendisliği ve ilgili alanlarda karmaşık mühendislik problemlerini saptama, tanımlama, formüle etme ve çözme becerisi; bu amaçla uygun analiz ve modelleme yöntemlerini seçme ve uygulama becerisi.				X
3	Gerçekçi kısıtlar ve koşullar altında ve belirli gereksinimleri kapsayacak şekilde Elektrik-Elektronik Mühendisliğini ilgilendiren karmaşık bir sistemi, cihazı veya ürünü modern tasarım yöntemlerini uygulayarak tasarlama becerisi.				X
4	Elektrik-Elektronik Mühendisliği uygulamaları için gerekli olan modern teknik ve araçları geliştirme, seçme ve kullanma becerisi; bilişim teknolojilerini etkin bir şekilde kullanma becerisi.				X
5	Elektrik-Elektronik Mühendisliği problemlerinin incelenmesi için deney tasarlama, deney yapma, veri toplama, sonuçları analiz etme ve yorumlama becerisi				X
6	Disiplin içi ve çok disiplinli takımlarda etkin biçimde çalışabilme becerisi; bireysel çalışma becerisi.		x		
7	Türkçe ve İngilizce sözlü ve yazılı etkin iletişim kurma becerisi.		x		
8	Yaşam boyu öğrenmenin gerekliliği bilinci; bilgiye erişebilme, bilim ve teknolojideki gelişmeleri izleme ve kendini sürekli yenileme becerisi	x			
9	Mesleki ve etik sorumluluk bilinci		x		
10	Proje yönetimi ile risk yönetimi ve değişiklik yönetimi gibi iş hayatındaki uygulamalar hakkında bilgi; girişimcilik, yenilikçilik ve sürdürebilir kalkınma hakkında farkındalık.				x
11	Mühendislik uygulamalarının evrensel ve toplumsal boyutlarda sağlık, çevre ve güvenlik üzerindeki etkileri ile çağın sorunları hakkında bilgi; mühendislik çözümlerinin hukuksal sonuçları konusunda farkındalık.				x

Dersin program çıktılarına katkısı hakkında değerlendirme için:

4:Yüksek 3: Orta 2: Az 1: Hiç

Hazırlayan öğretim üyesi/üyeleri:

İmza(lar):

Tarih:

ESOGÜ Elektrik-Elektronik Mühendisliği Bölümü Ders Bilgi Formu

DERSİN KODU: 151011208 **DERSİN ADI:** Atatürk İlkeleri ve İnkılâp Tarihi I

YARIYIL	HAFTALIK DERS SAATİ		DERSİN			
	Teorik	Uygulama	Kredisi	AKTS	TÜRÜ	Language
1	2	0	2	2	ZORUNLU (x) SEÇMELİ ( )	Turkish (x) English ()

Dersin kredisini (kredisiz derslerde haftalık saatini) aşağıya işleyiniz (Gerekli görüyorsanız paylaştırınız.).

Matematik ve Temel Bilimler	Mesleki Konular [Önemli düzeyde tasarım içeriyorsa (√) koyunuz.]	Genel Eğitim	Sosyal
	( )		

ÖLÇME- DEĞERLENDİRME ETKİNLİKLERİ	TEORİK- UYGULAMALI DERSLER			LABORATUVAR DERSLERİ		
YARIYIL İÇİ	Faaliyet türü	Sayı	%	Faaliyet türü	Sayı	%
	Ara Sınav	1	40	Kısa Sınav		
	Kısa Sınav			Deneyin Yapılışı		
	Ödev			Rapor		
	Proje			Rapor Sözlüsü		
	Diğer (……)			Diğer (……)		
YARIYIL SONU SINAVI		1	60			
MAZERET SINAVI (Sözlü/Yazılı)						

VARSA ÖNERİLEN ÖNKOŞUL(LAR)	
DERSİN KISA İÇERİĞİ	Tarih açısından Türk Devriminin temellerini, Türk devrimin tarihi gelişimi, zaman dizinsel eksende karşılaştırmalı olarak ele alınarak, Tam bağımsızlık ve Ulusal egemenlik kavramlarını irdelemekte, verilen savaşım genç bireylere aktarılmaktadır.
DERSİN AMAÇLARI	Öğrencilerin, Atatürk ilke ve devrimlerine bağlı, laik, demokratik ve çağdaş değerleri benimseyen ve koruyan bireyler olarak yetişmelerini sağlamak. Bu ders boyunca öğrencilere, demokrasinin çağımızın en iyi yaşam tarzı olduğu kavratılır, demokrasinin korunması ve geliştirilmesi bilinci kazandırılır.
DERSİN MESLEK EĞİTİMİNİ SAĞLAMAYA YÖNELİK KATKISI	Kişilik gelişimini tamamlama sürecinde tam bağımsızlık ve ulusal egemenlik kavramları ile bilinçlenme işleminin tamamlanmaktadır. Dersin genel anlamda, kendini gerçekleştiren, kültürlü, gündeme duyarlı olan eleştirel yaklaşımı benimsemiş, yapıcı ve çözüm odaklı birey oluşturma sürecinde katkısı gözlenmiştir
DERSİN ÖĞRENİM ÇIKTILARI	Sosyal bilimlere ilişkin bilgilerini uygulama becerisi Verileri analiz edebilme, değerlendirebilme ve tasarlama becerisi Disiplinler arası bir takıma liderlik edebilme becerisi Yaşama karşılaştırmalı bakabilme becerisi, mesleki ve etik sorumluluğu anlama, etkin yazılı ve sözlü iletişim becerisi Verilerin ulusal ve küresel tesiri ile sonuçlarını anlama becerisi Hayat boyu öğrenimin önemini kavrama ve uygulama becerisi Mesleki güncel konuları izleme becerisi Bağımsız ya da danışman yönetiminde bilimsel araştırma yapabilme becerisi
TEMEL DERS KİTABI	Gazi Mustafa Kemal Atatürk, Nutuk (Söylev), C. I-II, TTK., Ankara, 1986. İmparatorluktan Ulus Devlete Türk İnkılâp Tarihi, Cemil Öztürk (ed.), Ank., 2011.
YARDIMCI KAYNAKLAR	Niyazi Berkes, Türkiye'de Çağdaşlaşma, İstanbul, 1978. Enver Ziya Karal, Atatürk ve Devrim (Konferanslar ve Makaleler), TTK., Ankara, 1980. Enver Ziya Karal, Atatürk'ten Düşünceler, MEB. Yay., Ankara, 1981. Bernard Lewis, Modern Türkiye'nin Doğuşu, Çev.M.Kıratlı, TTK., Ankara, 1970. Ahmet Mumcu, Tarih Açısından Türk Devriminin Temelleri ve Gelişimi, Ankara, 1976.

DERSTE GEREKLİ ARAÇ VE GEREÇLER	Projeksiyon Makinesi, Harita, Fotoğraf, İstatistikî Tablolar, Grafikler

DERSİN HAFTALIK PLANI	
HAFTA	**İŞLENEN KONULAR**
1	Atatürk İlkeleri ve İnkılâp Tarihi dersini okutmanın amacı ve İnkılâp kavramı
2	Osmanlı İmparatorluğu'nun Yıkılışını ve Türk inkılâbını Hazırlayan Sebeplere Toplu Bakış
3	Osmanlı İmparatorluğu'nun Parçalanması (Trablusgarp, Balkan Savaşları ve Birinci Dünya Savaşı)
4	Mondros Ateşkes Antlaşması
5	İşgaller Karşısında Memleketin Durumu ve Mustafa Kemal Paşa'nın Tepkisi
6	Mustafa Kemal Paşa'nın Samsun'a Çıkışı, Milli Mücadele İçin İlk Adım, Kongreler Yolu İle Teşkilatlanma
7	Kuva-yı Milliye ve Misak-ı Milli
8	Ara sınav
9	Ara sınav
10	Türkiye Büyük Millet Meclisi'nin Açılması
11	Türkiye Büyük Millet Meclisi'nin İstiklal Savaşı'nın Yönetimini ele alması
12	Sakarya Zaferine Kadar Milli Mücadele; Eğitim ve Kültür Alanında Milli Mücadele
13	Sakarya Savaşı ve Büyük Taarruz
14	Mudanya'dan Lozan'a
15,16	Yarıyıl sonu sınavı

NO	PROGRAM ÇIKTISI	4	3	2	1
1	Matematik, fen bilimleri ve Elektrik-Elektronik Mühendisliği konularında yeterli bilgi birikimi; bu alanlardaki kuramsal ve uygulamalı bilgileri Elektrik-Elektronik Mühendisliği problemlerini modelleme ve çözme için uygulayabilme becerisi.				X
2	Elektrik-Elektronik Mühendisliği ve ilgili alanlarda karmaşık mühendislik problemlerini saptama, tanımlama, formüle etme ve çözme becerisi; bu amaçla uygun analiz ve modelleme yöntemlerini seçme ve uygulama becerisi.				X
3	Gerçekçi kısıtlar ve koşullar altında ve belirli gereksinimleri kapsayacak şekilde Elektrik-Elektronik Mühendisliğini ilgilendiren karmaşık bir sistemi, cihazı veya ürünü modern tasarım yöntemlerini uygulayarak tasarlama becerisi.				X
4	Elektrik-Elektronik Mühendisliği uygulamaları için gerekli olan modern teknik ve araçları geliştirme, seçme ve kullanma becerisi; bilişim teknolojilerini etkin bir şekilde kullanma becerisi.				X
5	Elektrik-Elektronik Mühendisliği problemlerinin incelenmesi için deney tasarlama, deney yapma, veri toplama, sonuçları analiz etme ve yorumlama becerisi				X
6	Disiplin içi ve çok disiplinli takımlarda etkin biçimde çalışabilme becerisi; bireysel çalışma becerisi.		X		
7	Türkçe ve İngilizce sözlü ve yazılı etkin iletişim kurma becerisi.		X		
8	Yaşam boyu öğrenmenin gerekliliği bilinci; bilgiye erişebilme, bilim ve teknolojideki gelişmeleri izleme ve kendini sürekli yenileme becerisi	X			
9	Mesleki ve etik sorumluluk bilinci		X		
10	Proje yönetimi ile risk yönetimi ve değişiklik yönetimi gibi iş hayatındaki uygulamalar hakkında bilgi; girişimcilik, yenilikçilik ve sürdürebilir kalkınma hakkında farkındalık.				X
11	Mühendislik uygulamalarının evrensel ve toplumsal boyutlarda sağlık, çevre ve güvenlik üzerindeki etkileri ile çağın sorunları hakkında bilgi; mühendislik çözümlerinin hukuksal sonuçları konusunda farkındalık.				X

Dersin program çıktılarına katkısı hakkında değerlendirme için:

4:Yüksek 3: Orta 2: Az 1: Hiç

Hazırlayan öğretim üyesi/üyeleri:

İmza(lar):

Tarih:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151221202 **COURSE TITLE:** CALCULUS I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
1	4	0	4	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
4	0	( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	2	10	Lab performance		
	Homework	4	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final			50			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Functions. Limits and continuity. Differentiation. Applications of derivatives. Integration. Sequences and series.
Objectives of the course	Main objective of this course is to teach students basic concepts, theorems of calculus and provide them the ability to solve mathematical problems.
Contribution of the course towards professional education	By taking this course, the students gain necessary mathematical background for engineering courses and their professional lives.
Outcomes of the course	1. Solving limit problems. 2. Defining differentiation. 3. Applying derivatives to certain problems. 4. Defining integration. 5. Solving definite integrals. 6. Analyzing sequences and series.
Textbook of the course	George B. Thomas Jr., Thomas' Calculus, 12th edition, Pearson Publications, 2009.
Other reference books	- Abdülkadir Özdeğer ve Nursun Özdeğer, Çözümlü Analiz Problemleri Cilt I, İTÜ Fen Fakültesi Yayınları, 1996. - Ahmet A. Karadeniz, Yüksek Matematik Cilt: 1, 14. Baskı, Çağlayan Kitabevi, 2011. - Ahmet A. Karadeniz, Yüksek Matematik Cilt: 2, 9. Baskı, Çağlayan Kitabevi, 2007.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Functions and their graphs. Shifting and scaling.
2	Trigonometric functions. Exponential functions. Inverse functions. Natural logarithm.
3	Limits. Types of limits.
4	Types of limits. Continuity of a function.
5	Differentiation. Tangents and derivative at a point. Differentiation rules.
6	Derivatives of certain functions. Chain rule. Implicit differentiation.
7	Extreme values of a function. Mean value theorem.
8	Midterm
9	Midterm
10	Integration. Definite integrals.
11	Fundamental theorem of integral calculus. Indefinite integrals. Integration by parts.
12	Trigonometric substitutions. Volumes.
13	Sequences and infinite series. Convergence. Comparison tests. Ratio and root tests.
14	Alternating series. Absolute convergence. Power series. Taylor and Maclaurin series.
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Asst. Prof. Dr. Özge YANAZ ÇINAR

Signature(s):

Date:

COURSE INFORMATION FORM

SEMESTER	Fall

COURSE CODE	151221197	COURSE NAME	CALCULUS I

SEMESTER	WEEKLY COURSE PERIOD			COURSE			
	THEORY	PRACTISE	LABORATORY	Credit	ECTS	TYPE	LANG.
Fall	3	2	2	4	5	Required	EN

COURSE CATEGORY (Credit Distribution)				
Basic Science	Basic Engineering	Includes Design	Electrical-Electronics Engineering	Social Science
4				

ASSESMENT CRITERIA			
EXAM NAME		EVALUATION TYPE	%
IN TERM EXAMS	1st Mid Term	WRITTEN	20
	2nd Mid Term	WRITTEN	20
	Other Exam 1	SEMINAR	20
	Other Exam 2	---	0
	Other Exam 3	---	0
	Other Exam 4	---	0
	Other Exam 5		
	Other Exam 6		
	Other Exam 7		
	Other Exam 8		
FINAL EXAM		WRITTEN	40
EXCUSE EXAM			

PREREQUISITE(S)	
COURSE DESCRIPTION	Functions, graphs, parabolas, limit rules, continuity, derivatives, graph sketching, Taylor polynomials, sums, areas, definite integrals, indefinite integrals, volumes, areas of surfaces, moment, parametric curves, spherical coordinates.
COURSE OBJECTIVES	The objective of the course is to prepare the first year engineering students for the solution and analysis of the mathematical problems that they will be exposed in the engineering courses.
CONTRIBUTION TOWARDS PROFESSIONAL EDUCATION	Students will learn how to use and interpret the functions with one independent variable including limit, continuity, derivatives and integrals in which they may encounter with latter engineering lectures.
COURSE OUTCOMES	To gain the ability to use and interpret some fundamental mathematical concepts such as limit, continuity, derivatives and integrals.
TEXTBOOK	Calculus, A Complete Course-Fifth Edition, Robert A. Adams, Addison-Wesley, 2001
OTHER REFERENCES	1) Calculus and Analytic Geometry, 9th Edition, G. B. Thomas,Jr., R. L. Finney, Addison-Wesley, 1998.2) Calculus the Maple Way, Robert B. Israel, Addison-Wesley, 2000.
TOOLS AND EQUIPMENTS REQUIRED	

COURSE SYLLABUS	
WEEK	**TOPICS**
1	Introduction, real numbers, Cartesian coordinate system
2	Functions, circles, parabolas, ellipses
3	Limits of functions, limit rules, continuity
4	Tangent lines, derivatives, differentiation rules, the chain rule
5	Derivatives of trigonometric functions, the mean value theorem
6	MID TERM EXAMINATION 1
7	Extreme values, concavity, graph sketching
8	Linear approximations, Taylor polynomials
9	Summations, areas, definite integrals, properties of integration
10	Techniques of integration: the substitution methods
11	MID TERM EXAMINATION 1
12	Rational functions, improper integrals, integration methods
13	Volumes, surface areas, arc lengths and moments
14	Conics, parametric curves, spherical coordinates
15,16	FINAL EXAM

NO	PROGRAM OUTCOMES	SUPPORT LEVEL
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	4 High
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	4 High
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	3 Medium
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	2 Less
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	1 None
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	1 None
7	Communicating effectively in oral and written form both in Turkish and English.	1 None
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	2 Less
9	Understanding of professional and ethical responsibility	1 None
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1 None
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1 None

PREPARED BY	SIGNATURE	DATE
Asst.Prof.Dr.SEMİH ERGİN		12/12/2012

Go Back

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151221195 **COURSE TITLE:** Chemistry

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
1	3	0	3	3	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
3	0	( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)	Oral					

Prerequisites	-
Brief content of the course	Basic properties of subsances, measurements, atoms and atomic theory, periodic table and periodic properties, chemical reactions and stoichiometry, gaseous state, thermodynamics and thermochemistry, solutions, chemical equilibria, electrochemistry
Objectives of the course	To introduce the main subjects of chemistry, to provide the basic chemistry knowledge necessary for electrical engineering
Contribution of the course towards professional education	Providing the fundamental chemistry knowledge and the ability of solving problems in chemistry
Outcomes of the course	The student can define, explain and use the basic knowledge on the subjects in the course contents and can also solve the prroblems related to these areas
Textbook of the course	Chemistry, The Study of Matter and Its Changes; J. E. Brady, J. R. Holum; John Wiley & Sons, Inc.
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Basic concepts and properties, measurements, units, dimensions, basic calculations
2	Atoms and atomic theory, periodic table and periodic properties, the mol concept
3	Chemical reactions and stoichiometry
4	Chemical compounds, mole and chemical Formula calculations, mass relationships in chemical phenomena
5	Concentration units, stoichiometry in solutions
6	Gaseous state
7	Thermodynamics
8	Midterm
9	Midterm
10	Thermochemistry
11	Equilibrium
12	Solutions, colligative properties
13	Chemical equilibria
14	Electrochemistry
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing			**X**	
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Osman Sermet Kabasakal

Signature(s): **Date:**

COURSE INFORMATION FORM

SEMESTER	Fall

COURSE CODE	151221196	COURSE NAME	CHEMISTRY LAB

SEMESTER	WEEKLY COURSE PERIOD			COURSE			
	THEORY	PRACTISE	LABORATORY	Credit	ECTS	TYPE	LANG.
Fall	0	2	2	1	2	Required	EN

COURSE CATEGORY (Credit Distribution)				
Basic Science	Basic Engineering	Includes Design	Electrical-Electronics Engineering	Social Science
2				

ASSESMENT CRITERIA			
EXAM NAME		EVALUATION TYPE	%
IN TERM EXAMS	1st Mid Term	WRITTEN	70
	2nd Mid Term		0
	Other Exam 1		
	Other Exam 2		
	Other Exam 3		
	Other Exam 4		
	Other Exam 5		
	Other Exam 6		
	Other Exam 7		
	Other Exam 8		
FINAL EXAM		WRITTEN	30
EXCUSE EXAM			

PREREQUISITE(S)	
COURSE DESCRIPTION	Verification of the Law of Definite Proportions, calculation of the ideal gas constant and the molar volume of a gas, calculation of the equivalent weight and atomic mass of a metal, qualitative analysis, titrimetric analysis, Charles Law
COURSE OBJECTIVES	To give the abilities to obtain, evaluate, discuss, report and submit the experimental data by performing the experiments which are the applications of the knowledge of chemistry gained in the chemistry course
CONTRIBUTION TOWARDS PROFESSIONAL EDUCATION	Providing the experimental chemistry knowledge and the abilities to obtain, evaluate, discuss, report and submit the experimental data
COURSE OUTCOMES	The student can obtain, evaluate, discuss, report and submit the experimental data
TEXTBOOK	İnel, O. , Genel Kimya Laboratuvar Kılavuzu, Eskişehir
OTHER REFERENCES	
TOOLS AND EQUIPMENTS REQUIRED	Laboratory equipments and experimental setups

COURSE SYLLABUS	
WEEK	**TOPICS**
1	Introduction
2	Establishing the experimental study groups
3	Explanations on the laboratory and safety rules and related subjects
4	Obtaining, evaluation, discussion and reporting the experimental data
5	Verification of the Law of Definite Proportions
6	MID TERM EXAMINATION 1
7	Calculation of the ideal gas constant and the molar volume of a gas
8	Calculation of the equivalent weight and atomic mass of a metal
9	Qualitative analysis
10	Titrimetric analysis
11	MID TERM EXAMINATION 1
12	Charles Law
13	Make up of missed experiments
14	Make up of missed experiments
15,16	FINAL EXAM

NO	PROGRAM OUTCOMES	SUPPORT LEVEL
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	4 High
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	2 Less
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	2 Less
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	2 Less
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	3 Medium
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	2 Less
7	Communicating effectively in oral and written form both in Turkish and English.	4 High
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	2 Less
9	Understanding of professional and ethical responsibility	2 Less
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1 None
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1 None

PREPARED BY	SIGNATURE	DATE
Prof.Dr.VURAL BÜTÜN		12/12/2012

Go Back

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151221132 **COURSE TITLE:** Expository Writing

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
1	3	0	3	4	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )	3	

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	30	Quiz		
	Quiz			Lab performance		
	Homework	5	30	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final			40			
Makeup exam (Oral/Written)						

Prerequisites	None
Brief content of the course	Writing process, brainstorming, planning, drafting, revising, editing, paragraph writing, 5-paragraph essay, introduction, body and conclusion paragraphs, process essay, classification essay, cause-effect essay, comparison-contrast essay.
Objectives of the course	Introduction to the writing process Teaching paragraph and essay writing Practicing 5-paragraph essay writing
Contribution of the course towards professional education	Development of written communication skills Introduction to the professional composition writing
Outcomes of the course	Having successfully completed this course, students should be able to write 5-paragraph or longer essays without borrowing information.
Textbook of the course	Karen Blanchard and Christine Root, *Ready to Write More*, Longman, 1997
Other reference books	Ellen Lipp, *From Paragraph to Term Paper*, Macmillan,
Required material for the course	Ruled sheets of paper or a notebook

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the course, purpose and expectations
2	The writing process
3	Subject, purpose and audience
4	Developing paragraphs
5	Unity and coherence in paragraphs
6	5-Paragraph essay, introduction and conclusion paragraphs
7	Process essay
8	Midterm
9	Midterm
10	Process essay practice
11	Classification essay
12	Cause/Effect essay
13	Cause/Effect essay practice
14	Comparison/contrast essay
15,16	Final Exam

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.	**X**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Prof. Dr. Hasan Hüseyin Erkaya

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151221203 **COURSE TITLE:** Introduction to Programming

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
1	2	2	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
0	3	( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	35	Quiz		
	Quiz			Lab performance	10	20
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	45			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Introduction to c programming; flow diagram, data types/conversion, operators, expressions and statements, compilers, conditionals, loops, functions, basic structure of a program, arrays
Objectives of the course	Learn to write simple programs in C
Contribution of the course towards professional education	Students aiming to be a future programmer get familiar with introductory details of the programming in C.
Outcomes of the course	1. Students will know how to write simple programs in C 2. Understand and follow code written in these languages 3. Gain ability to create simple algorithms and methods to solve simple problems
Textbook of the course	Al Kelley, Ira Pohl, A Book on C, Programming in C, Addison-Wesley
Other reference books	Lecture notes, previous exams and homeworks, resources on the internet
Required material for the course	Accessible computers for each student, MS Visual C/C++ or any C development tool installed.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Number systems and conversion
2	Data types in C and declaration
3	C Compiler, functions and expressions, basic programming structure
4	Operators, conditionals if and switch
5	Data conversion, declarations with initializers
6	Loop statements for, do-while, while and goto labels, break, continue
7	Some library functions and examples using them
8,9	Midterm
10	Examples using loops and library functions
11	Static arrays
12	Static arrays
13	Character arrays and related library functions
14	Parallel arrays and closing examples
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.			**x**	
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.			**x**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering			**x**	
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**x**		
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Assist. Prof. Erol Seke

Signature(s):

Date:

COURSE INFORMATION FORM

SEMESTER	Fall

COURSE CODE	151221113	COURSE NAME	INTRODUCTION TO PROGRAMMING

SEMESTER	WEEKLY COURSE PERIOD			COURSE			
	THEORY	PRACTISE	LABORATORY	Credit	ECTS	TYPE	LANG.
Fall	2	0	0	2	3	Required	EN

COURSE CATEGORY (Credit Distribution)				
Basic Science	Basic Engineering	Includes Design	Electrical-Electronics Engineering	Social Science
	2			

ASSESMENT CRITERIA			
EXAM NAME		EVALUATION TYPE	%
IN TERM EXAMS	1st Mid Term	WRITTEN	25
	2nd Mid Term	WRITTEN	25
	Other Exam 1	APPLICATION	15
	Other Exam 2	---	0
	Other Exam 3	---	0
	Other Exam 4		
	Other Exam 5		
	Other Exam 6		
	Other Exam 7		
	Other Exam 8		
FINAL EXAM		WRITTEN	35
EXCUSE EXAM			

PREREQUISITE(S)	
COURSE DESCRIPTION	Introduction to c programming; declaration, initialization, data conversion, operators, expressions and statements, conditionals, loops, functions, arrays, basic structure of a program, introduction to VB, properties, methods and event handling in VB.
COURSE OBJECTIVES	Learn to write simple programs in C and VB
CONTRIBUTION TOWARDS PROFESSIONAL EDUCATION	Students aiming to be a future programmer get familiar with introductory details of the programming.
COURSE OUTCOMES	1)Students will know how to write simple programs in C and VB 2)Understand and follow code written in these languages 3)Gain ability to create simple algorithms and methods to solve simple problems
TEXTBOOK	Al Kelley, Ira Pohl, A Book on C, Programming in C, Addison-Wesley
OTHER REFERENCES	Resources on the internet
TOOLS AND EQUIPMENTS REQUIRED	Accessible computers for each student, MS Visual C/C++ or any C development tool and MS Visual Basic installed.

COURSE SYLLABUS	
WEEK	**TOPICS**
1	Number systems and conversion
2	Data types in C and declaration
3	Functions and expressions, basic programming structure
4	Operators
5	Data conversion, declarations with initializers
6	MID TERM EXAMINATION 1
7	Conditionals if and switch
8	Loop statements for, do-while, while and goto labels, break, continue
9	Some library functions and examples using them
10	Some library functions and examples using them continued.
11	MID TERM EXAMINATION 1
12	Static arrays
13	Character arrays and related library functions
14	Multidimensional arrays and closing examples
15,16	FINAL EXAM

NO	PROGRAM OUTCOMES	SUPPORT LEVEL
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	4 High
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	3 Medium
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	1 None
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	3 Medium
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	3 Medium
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	2 Less
7	Communicating effectively in oral and written form both in Turkish and English.	1 None
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	4 High
9	Understanding of professional and ethical responsibility	2 Less
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1 None
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	2 Less

PREPARED BY	SIGNATURE	DATE
Asst.Prof.Dr.KEMAL ÖZKAN		12/12/2012

Go Back

COURSE INFORMATION FORM

SEMESTER	Fall

COURSE CODE	151221200	COURSE NAME	INTRODUCTION TO COMPUTERS

SEMESTER	WEEKLY COURSE PERIOD			COURSE			
	THEORY	PRACTISE	LABORATORY	Credit	ECTS	TYPE	LANG.
Fall	1	2	2	0	2	Required	EN

COURSE CATEGORY (Credit Distribution)				
Basic Science	Basic Engineering	Includes Design	Electrical-Electronics Engineering	Social Science
	2			

ASSESMENT CRITERIA			
EXAM NAME		EVALUATION TYPE	%
IN TERM EXAMS	1st Mid Term	WRITTEN	25
	2nd Mid Term	WRITTEN	25
	Other Exam 1		
	Other Exam 2		
	Other Exam 3		
	Other Exam 4		
	Other Exam 5		
	Other Exam 6		
	Other Exam 7		
	Other Exam 8		
FINAL EXAM		WRITTEN	50
EXCUSE EXAM			

PREREQUISITE(S)	
COURSE DESCRIPTION	History of Computing and Computers, Computer Basics. Inside the System Unit, Input/Output and Storage, MS Windows Shell, Directory and File Systems, MS Windows Tools, MS Windows Settings, Introduction to Operating Systems, DOS commands, MS Office Word, MS Office Excel, MS Office Power Point, MS Outlook Express, Introduction to Networking.
COURSE OBJECTIVES	Teaching computer basics, working principles of system unit, input, output and storage units. Teaching principal operating systems, DOS commands, MS Office Word, MS Office Excel, MS Office Power Point, MS Outlook Express. Teaching introductory knowledge about Networking.
CONTRIBUTION TOWARDS PROFESSIONAL EDUCATION	Students will be able to use the knowledge on computer basics and principal office applications at their professional life.
COURSE OUTCOMES	At the end of the course, students; 1) will learn the basics of computers and working principles of hardware components. 2)will have knowledge about principal operating systems. 3)will learn how to use MS Office softwares.
TEXTBOOK	Catherine Laberta, Computers are your Future Complete, 11/E, Prentice Hall, 2010.
OTHER REFERENCES	Hasan Çebi BAL, Bilgisayar ve İnternet Kullanımı, abp-academic book production, 2005

TOOLS AND EQUIPMENTS REQUIRED	Computer Laboratory, Datashow.

COURSE SYLLABUS	
WEEK	**TOPICS**
1	History of Computing and Computers, Computer Basics.
2	Inside the System Unit.
3	Input/Output and Storage.
4	MS Windows Shell, Directory and File Systems, MS Windows Tools, MS Windows Settings
5	Introduction to Operating Systems, DOS commands
6	MID TERM EXAMINATION 1
7	MS Office Word
8	MS Office Word
9	MS Office Excel
10	MS Office Excel
11	MID TERM EXAMINATION 1
12	MS Office Power Point
13	MS Outlook Express
14	MS Outlook Express
15,16	FINAL EXAM

NO	PROGRAM OUTCOMES	SUPPORT LEVEL
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	2 Less
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	1 None
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	1 None
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	4 High
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	1 None
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	1 None
7	Communicating effectively in oral and written form both in Turkish and English.	1 None
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	4 High
9	Understanding of professional and ethical responsibility	3 Medium
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1 None
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1 None

PREPARED BY	SIGNATURE	DATE
InstructorEFNAN ŞORA GÜNAL		12/12/2012

Go Back

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151221198 **COURSE TITLE:** Physics I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
1	3	0	3	3	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
3	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	40	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (Present.)			Other (……)		
Final		1	60			
Makeup exam (Oral/Written)	Oral					

Prerequisites	
Brief content of the course	Measurement; vectors; motion along a straight line; motion in two and three dimensions; force and motion I; force and motion II; kinetic energy and work; conservation of energy; center of mass and linear momentum; rotation; rolling, torque and angular momentum; equilibrium and elasticity; gravitation; oscillations.
Objectives of the course	To provide a basic understanding of Newtonian mechanics and conservation laws.
Contribution of the course towards professional education	Define problems in physical systems, formulate and solve them analytically; in general develop problem solving skills.
Outcomes of the course	1. Understand vector and scalar quantities. 2. Identify, formulate, and solve problems analytically that appear in physical systems. 3. Analyze and resolve natural phenomenon. 4. Associate the gained knowledge, analyze and interpret data. 5. Apply and link the gained knowledge of natural sciences to interdisciplinary fields. 6. Correlate and apply gained knowledge directly with technology and industry. 7. Use techniques and skills necessary for engineering practice.
Textbook of the course	**1. Halliday, D., Resnick, R., and Walker, J. (2008).** Fundamentals of Physics (8th Edition). John Wiley & Sons, Inc. **2. Serway, R.A., Beichner, R.J.,** Physics For Scientists and Engineers with Modern Physics (2007), Harcourt College Publishers
Other reference books	1. **Young, H.D, Freedman, R.A. (2006).** University Physics Volume1 (12th Edition). Pearson/Addison Wesley **2.Ohanian, H.C. (1989).** Physics (2nd Edition) New York: W.W. Norton & Company, Inc. **3.Giancoli, D.C. (2004).** Physics: Principles with Applications (6th Edition). Pearson Education Inc.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Vectors
2	Kinematics in one dimension
3	Kinematics in two and three dimensions
4	Dynamics – Newton's Law
5	Dynamics – Forces and the solution of the equation of motion
6	Work and energy
7	Conservation of energy
8	Midterm
9	Midterm
10	Gravitation
11	Systems of particles
12	Collisions
13	Kinematics and Dynamics of a rigid body
14	Oscillations
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and E&E Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Computer Engineering	**X**			
2	Ability to identify complex engineering problems in E&E Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**X**		
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the E&E Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Engineering applications, skills to use information technology effectively.			**X**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of E&E Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form in Turkish and one foreign language.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151221199 **COURSE TITLE:** Physics Laboratory I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
1	0	2	1	2	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
1	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm			Quiz		
	Quiz			Lab performance		
	Homework			Report	7	50
	Project			Oral exam		
	Other (……)			Other (……)		
Final					1	50
Makeup exam (Oral/Written)				Oral		

Prerequisites	
Brief content of the course	Measurement; Projectile motion; Newton's second law; moment of inertia; spring; viscosity; Archimet's principle.
Objectives of the course	To strengthen insights into the fundamental concepts of physics related to Newtonian mechanics through direct investigations and provide hands-on experience.
Contribution of the course towards professional education	Enhance observational and analytical skills.
Outcomes of the course	8. Enhance observational and analytical skills. 9. Develop an appreciation for qualitative and quantitative reasoning. 10. Develop physical curiosity. 11. Develop team skills. 12. Make measurements with common instruments. 13. Make objective observations of physical phenomena. 14. Draw conclusions based on observations and data. 15. Analyze quantitative information using sketches, graphs, tables, and statistics. 16. Conduct quantitative and qualitative discussions of observational errors. 17. Produce a lab report.
Textbook of the course	Physics I Experiments. Eskisehir. Eskisehir Osmangazi University Publications, Yrd.Doç.Dr. Sertaç Eroğlu, Dr. Murat Kellegöz, Dr. Gökhan Kılıç, Halil Yasin Adıyaman
Other reference books	1. **Halliday, D., Resnick, R., and Walker, J. (2008).** Fundamentals of Physics (8th Edition). John Wiley & Sons, Inc. 2.**Serway, R.A., Beichner, R.J**., Physics For Scientists and Engineers with Modern Physics (2007), Harcourt College Publishers
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	
2	
3	Lab introduction
4	Measurement
5	Projectile motion
6	Newton's second law
7	Moment of inertia
8	Mid-term week – no experiment
9	Mid-term week – no experiment
10	Spring
11	Viscosity
12	Archimet's principle
13	Mid-term week – no experiment
14	
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and E&E Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Computer Engineering	**X**			
2	Ability to identify complex engineering problems in E&E Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the E&E Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of E&E Engineering problems		**X**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**X**		
7	Communicating effectively in oral and written form in Turkish and one foreign language.			**X**	
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): M. Celalettin Baykul

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151221181 **COURSE TITLE:** TURKISH I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
1	2	0	0	2	Compulsory (x) Elective ( )	Turkish (x) English ()

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )	2	

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)	Oral					

Prerequisites	-
Brief content of the course	The contents of this course are description and features of language, languages of the world, Position of Turkish among other languages, historical development of Turkish, development of western Turkish, Atatürk's ideas and projects on Turkish, pronunciation and punctuation, language policies.
Objectives of the course	The subject of the course is to expose the value of Turkish language by giving information about development of Turkish language, to gain national language awareness, to develop reading and writing skills, to compare and contrast Turkish language to other languages, to compare and contrast language policy of developed countries to Turkish language policy, to gain skill of speaking.
Contribution of the course towards professional education	1. Learn Turkish grammar 2. Gain an understanding of the position of Turkish among other languages 3. Gain an understanding of history of Turkish language 4. Gain knowledge about Turkish languages in the world 5. Develop the ability of using Turkish properly 6. Learn the language policies 7. Gain writing skill 8. Gain speaking skill 9. Learn sentence structure and analyzing 10. Be able to realize Turkish vowels 11. Be able to realize formation of Turkish 12. Be able to read and comprehend 13. Be able to speak simultaneously 14. Be able to write compositions
Outcomes of the course	
Textbook of the course	1. Ergin, M. (1997). Üniversiteler İçin Türk Dili. İstanbul: Bayrak Yayınları 2. Kaplan, M. (1993). Kültür ve Dil. İstanbul: Dergâh Yayınları (8. baskı) 3. Fuat, M. (2001). Dil Üstüne. İstanbul: Adam Yayınları 4. Aksan, D. (1984). Türkçe'nin Gücü. Ankara: Bilgi Yayınevi (4. baskı) 5. Karamanlıoğlu, A. F. (1984). Türk Dili. İstanbul: Dergâh Yayınları (3. baskı) 6. Anday, M. C. (1996). Dilimiz Üstüne Konuşmalar. İstanbul: Yapı Kredi Yayınları 7. Karaağaç, G. (2002). Dil Tarih ve İnsan. Ankara: Akçağ Yayınevi 8. Aksan, D. (2003). Dil Şu Büyülü Düzen. Ankara: Bilgi Yayınevi

	9. Banarlı, N. S. (2002). Türkçe'nin Sırları. İstanbul: Kubbealtı Neşriyatı (18. baskı) 10. Parlatır,İ. & Korkmaz, Z. & Gülensoy, T. & Zülfikar, H. & Birinci, N. (2005). Türk Dili ve Kompozisyon. Ankara: Ekin Yayınları
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Description and features of language
2	Description and features of language
3	Languages of the world
4	Position of Turkish among other languages
5	Historical development of Turkish
6	Historical development of Turkish
7	Development of western Turkish
8	Midterm
9	Midterm
10	Atatürk's ideas and projects on Turkish
11	Pronunciation
12	Punctuation
13	Punctuation
14	Language policies
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English.	**x**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**x**		
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151221204 **COURSE TITLE:** Introduction to Electrical and Electronics Engineering

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
1	1	2	2	3	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	2 (x)		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm	1	30	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (Lab)	8	40	Other (……)		
Final	Project	1	30			
Makeup exam (Oral/Written)	Written					

Prerequisites	none
Brief content of the course	Introduction to the university and department, introduction to the profession, basic concepts about voltage and current, wiring, soldering, hand tools, hobby circuits, and electrical safety.
Objectives of the course	To create more interest into the profession, To introduce the basic concepts of voltage, current and power To initiate hands-on experience
Contribution of the course towards professional education	Help students realize the importance of Electrical Engineering Help students be familiar with safety precautions
Outcomes of the course	Students who attend this course will have a better understanding of the curriculum, the requirements, and senior projects. They will better understand what an engineer does in the Professional life.
Textbook of the course	none
Other reference books	none
Required material for the course	Hand tools and components in Electronics Laboratory

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introducing the University and EEE Department, course registration
2	Courses, practical training, senior projects and rules and regulations
3	Voltage, current, and electrical circuit components
4	Current, voltage and power measurements: analog and digital multi-meters
5	AC signals (frequency, period. RMS)
6	Function generator, oscilloscope
7	Electrical power generation and distribution
8	Midterm
9	Midterm
10	Electrical wiring, electrical installation, interior electrical wiring
11	ORCAD, Proetheus
12	Soldering techniques
13	Project: Installation of a hobby electronic circuit
14	Electrical safety
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering		**x**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**x**	
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.			**x**	
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Osman Parlaktuna

Signature(s):

Date: 02.03.2016

COURSE INFORMATION FORM

SEMESTER	Fall

COURSE CODE	151221148	COURSE NAME	INT. TO ELECTRICAL ENG. I

SEMESTER	WEEKLY COURSE PERIOD			COURSE			
	THEORY	PRACTISE	LABORATORY	Credit	ECTS	TYPE	LANG.
Fall	1	0	0	0	1	Elective	EN

COURSE CATEGORY (Credit Distribution)				
Basic Science	Basic Engineering	Includes Design	Electrical-Electronics Engineering	Social Science
			1	

ASSESMENT CRITERIA			
EXAM NAME		EVALUATION TYPE	%
IN TERM EXAMS	1st Mid Term	WRITTEN	50
	2nd Mid Term		0
	Other Exam 1		
	Other Exam 2		
	Other Exam 3		
	Other Exam 4		
	Other Exam 5		
	Other Exam 6		
	Other Exam 7		
	Other Exam 8		
FINAL EXAM		WRITTEN	50
EXCUSE EXAM			

PREREQUISITE(S)	
COURSE DESCRIPTION	Introduction to the university and department, introduction to the profession, basic concepts about voltage and current, wiring, soldering, hand tools, hoby circuits, and electrical safety.
COURSE OBJECTIVES	To create more interest into the profession,To introduce the basic concepts of voltage, current and powerTo initiate hands-on experience
CONTRIBUTION TOWARDS PROFESSIONAL EDUCATION	Help students realize the importance of Electrical Engineering,Help students be familiar with safety precautions
COURSE OUTCOMES	Students who attend this course will have a better understanding of the curriculum, the requirements, and senior projects.They will better understand what an engineer does in the Professional life
TEXTBOOK	
OTHER REFERENCES	
TOOLS AND EQUIPMENTS REQUIRED	Hand tools and components in Electronics Laboratory

COURSE SYLLABUS	
WEEK	**TOPICS**
1	Introducing the University and EEE Department, course registration
2	How to prepare homework and project reports
3	Courses, practical training, senior projects and rules and regulations
4	Voltage, current, and electrical circuit components
5	Electrical safety
6	MID TERM EXAMINATION 1
7	Current, voltage and power measurements: analog and digital multi-meters
8	AC signals (frequency, period. RMS)
9	Electrical power generation and distribution
10	Electrical wiring, electrical installation, interior electrical wiring
11	MID TERM EXAMINATION 1
12	Electrician toolkit (soldering iron, wire cutter, wire stripper, pliers, screwdrivers)
13	Soldering techniques
14	Project: Installation of a hobby electronic circuit
15,16	FINAL EXAM

NO	PROGRAM OUTCOMES	SUPPORT LEVEL
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	2 Less
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	1 None
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	1 None
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	2 Less
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	1 None
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	1 None
7	Communicating effectively in oral and written form both in Turkish and English.	1 None
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	4 High
9	Understanding of professional and ethical responsibility	3 Medium
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1 None
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	3 Medium

PREPARED BY	SIGNATURE	DATE
Prof.Dr.H.HÜSEYİN ERKAYA		12/12/2012

Go Back

ESOGÜ Elektrik-Elektronik Mühendisliği Bölümü Ders Bilgi Formu

DERSİN KODU:151222200 **DERSİN ADI:** Atatürk İlkeleri ve İnkılâp Tarihi II

YARIYIL	HAFTALIK DERS SAATİ		DERSİN			
	Teorik	Uygulama	Kredisi	AKTS	TÜRÜ	Language
2	2	0	2	2	ZORUNLU (x) SEÇMELİ ( )	Turkish (x) English ()

Dersin kredisini (kredisiz derslerde haftalık saatini) aşağıya işleyiniz (Gerekli görüyorsanız paylaştırınız.).

Matematik ve Temel Bilimler	Mesleki Konular [Önemli düzeyde tasarım içeriyorsa (√) koyunuz.]	Genel Eğitim	Sosyal
	( )		

ÖLÇME- DEĞERLENDİRME ETKİNLİKLERİ	TEORİK- UYGULAMALI DERSLER			LABORATUVAR DERSLERİ		
	Faaliyet türü	Sayı	%	Faaliyet türü	Sayı	%
YARIYIL İÇİ	Ara Sınav	1	40	Kısa Sınav		
	Kısa Sınav			Deneyin Yapılışı		
	Ödev			Rapor		
	Proje			Rapor Sözlüsü		
	Diğer (……)			Diğer (……)		
YARIYIL SONU SINAVI		1	60			
MAZERET SINAVI (Sözlü/Yazılı)						

VARSA ÖNERİLEN ÖNKOŞUL(LAR)	
DERSİN KISA İÇERİĞİ	Tarih açısından Türk Devriminin temellerini, Türk devrimin tarihi gelişimi, zamandizinsel eksende karşılaştırmalı olarak ele alınarak, Tam bağımsızlık ve Ulusal egemenlik kavramlarını irdelemekte, verilen savaşım genç bireylere aktarılmaktadır.
DERSİN AMAÇLARI	Öğrencilerin, Atatürk ilke ve devrimlerine bağlı, laik, demokratik ve çağdaş değerleri benimseyen ve koruyan bireyler olarak yetişmelerini sağlamak. Bu ders boyunca öğrencilere, demokrasinin çağımızın en iyi yaşam tarzı olduğu kavratılır, demokrasinin korunması ve geliştirilmesi bilinci kazandırılır.
DERSİN MESLEK EĞİTİMİNİ SAĞLAMAYA YÖNELİK KATKISI	Kişilik gelişimini tamamlama sürecinde tam bağımsızlık ve ulusal egemenlik kavramları ile bilinçlenme işleminin tamamlanmaktadır. Dersin genel anlamda, kendini gerçekleştiren, kültürlü, gündeme duyarlı olan eleştirel yaklaşımı benimsemiş, yapıcı ve çözüm odaklı birey oluşturma sürecinde katkısı gözlenmiştir
DERSİN ÖĞRENİM ÇIKTILARI	Sosyal bilimlere ilişkin bilgilerini uygulama becerisi Verileri analiz edebilme, değerlendirebilme ve tasarlama becerisi Disiplinler arası bir takıma liderlik edebilme becerisi Yaşama karşılaştırmalı bakabilme becerisi, mesleki ve etik sorumluluğu anlama, etkin yazılı ve sözlü iletişim becerisi Verilerin ulusal ve küresel tesiri ile sonuçlarını anlama becerisi Hayat boyu öğrenimin önemini kavrama ve uygulama becerisi Mesleki güncel konuları izleme becerisi Bağımsız ya da danışman yönetiminde bilimsel araştırma yapabilme becerisi
TEMEL DERS KİTABI	Gazi Mustafa Kemal Atatürk, Nutuk (Söylev), C. I-II, TTK., Ankara, 1986.
YARDIMCI KAYNAKLAR	Fatma Acun (Ed.), Atatürk ve Türk İnkılâp Tarihi, Ankara, 2010. Niyazi Berkes, Türkiye'de Çağdaşlaşma, İstanbul, 1978. Enver Ziya Karal, Atatürk ve Devrim (Konferanslar ve Makaleler), TTK., Ankara, 1980. Enver Ziya Karal, Atatürk'ten Düşünceler, MEB. Yay., Ankara, 1981. Bernard Lewis, Modern Türkiye'nin Doğuşu, Çev.M.Kıratlı, TTK., Ankara, 1970. Ahmet Mumcu, Tarih Açısından Türk Devriminin Temelleri ve Gelişimi, Ankara, 1976.
DERSTE GEREKLİ ARAÇ VE GEREÇLER	Projeksiyon Makinesi, Harita, Fotoğraf, İstatistikî Tablolar, Grafikler

DERSİN HAFTALIK PLANI	
HAFTA	**İŞLENEN KONULAR**
1	Türk İnkılâbının Stratejisi
2	Sevr ve Lozan Barış Antlaşması
3	Siyasi Alanda İki Büyük İnkılâp
4	Çok Partili Hayata Geçme Denemesi ve Bazı İç Siyasi Olaylar (TCF ve Takrir-i Sükûn Dönemi)
5	Türk Hukuk İnkılâbı
6	Eğitim ve Kültür İnkılâbı
7	İktisat Alanında Yapılan İnkılâplar
8	Ara sınav
9	Ara sınav
10	Sosyal Yapıda ve Sağlık Alanında İnkılâplar
11	Türkiye Cumhuriyeti'nin Dış Politikası
12	Üniversite Gençliğine Yönelik Psikolojik Harekât Tehdidi
13	Atatürk İlkeleri ve Bu İlkelere Yönelik Tehditler
14	Yükseköğretim Alanındaki Faaliyetler ve Üniversite Reformu
15,16	Yarıyıl sonu sınavı

NO	PROGRAM ÇIKTISI	4	3	2	1
1	Matematik, fen bilimleri ve Elektrik-Elektronik Mühendisliği konularında yeterli bilgi birikimi; bu alanlardaki kuramsal ve uygulamalı bilgileri Elektrik-Elektronik Mühendisliği problemlerini modelleme ve çözme için uygulayabilme becerisi.				**X**
2	Elektrik-Elektronik Mühendisliği ve ilgili alanlarda karmaşık mühendislik problemlerini saptama, tanımlama, formüle etme ve çözme becerisi; bu amaçla uygun analiz ve modelleme yöntemlerini seçme ve uygulama becerisi.				**X**
3	Gerçekçi kısıtlar ve koşullar altında ve belirli gereksinimleri kapsayacak şekilde Elektrik-Elektronik Mühendisliğini ilgilendiren karmaşık bir sistemi, cihazı veya ürünü modern tasarım yöntemlerini uygulayarak tasarlama becerisi.				**X**
4	Elektrik-Elektronik Mühendisliği uygulamaları için gerekli olan modern teknik ve araçları geliştirme, seçme ve kullanma becerisi; bilişim teknolojilerini etkin bir şekilde kullanma becerisi.				**X**
5	Elektrik-Elektronik Mühendisliği problemlerinin incelenmesi için deney tasarlama, deney yapma, veri toplama, sonuçları analiz etme ve yorumlama becerisi				**X**
6	Disiplin içi ve çok disiplinli takımlarda etkin biçimde çalışabilme becerisi; bireysel çalışma becerisi.		**x**		
7	Türkçe ve İngilizce sözlü ve yazılı etkin iletişim kurma becerisi.		**x**		
8	Yaşam boyu öğrenmenin gerekliliği bilinci; bilgiye erişebilme, bilim ve teknolojideki gelişmeleri izleme ve kendini sürekli yenileme becerisi	**x**			
9	Mesleki ve etik sorumluluk bilinci		**x**		
10	Proje yönetimi ile risk yönetimi ve değişiklik yönetimi gibi iş hayatındaki uygulamalar hakkında bilgi; girişimcilik, yenilikçilik ve sürdürebilir kalkınma hakkında farkındalık.				**x**
11	Mühendislik uygulamalarının evrensel ve toplumsal boyutlarda sağlık, çevre ve güvenlik üzerindeki etkileri ile çağın sorunları hakkında bilgi; mühendislik çözümlerinin hukuksal sonuçları konusunda farkındalık.				**x**

Dersin program çıktılarına katkısı hakkında değerlendirme için:

4:Yüksek 3: Orta 2: Az 1: Hiç

Hazırlayan öğretim üyesi/üyeleri:

İmza(lar):

Tarih:

ESOGÜ Elektrik-Elektronik Mühendisliği Bölümü Ders Bilgi Formu

DERSİN KODU: 151012209 **DERSİN ADI:** Atatürk İlkeleri ve İnkılâp Tarihi II

YARIYIL	HAFTALIK DERS SAATİ		DERSİN			
	Teorik	Uygulama	Kredisi	AKTS	TÜRÜ	Language
2	2	0	2	2	ZORUNLU (x) SEÇMELİ ( )	Turkish (x) English ()

Dersin kredisini (kredisiz derslerde haftalık saatini) aşağıya işleyiniz (Gerekli görüyorsanız paylaştırınız.).

Matematik ve Temel Bilimler	Mesleki Konular [Önemli düzeyde tasarım içeriyorsa (√) koyunuz.]	Genel Eğitim	Sosyal
	( )		

ÖLÇME- DEĞERLENDİRME ETKİNLİKLERİ	TEORİK- UYGULAMALI DERSLER			LABORATUVAR DERSLERİ		
	Faaliyet türü	Sayı	%	Faaliyet türü	Sayı	%
YARIYIL İÇİ	Ara Sınav	1	40	Kısa Sınav		
	Kısa Sınav			Deneyin Yapılışı		
	Ödev			Rapor		
	Proje			Rapor Sözlüsü		
	Diğer (……)			Diğer (……)		
YARIYIL SONU SINAVI		1	60			
MAZERET SINAVI (Sözlü/Yazılı)						

VARSA ÖNERİLEN ÖNKOŞUL(LAR)	
DERSİN KISA İÇERİĞİ	Tarih açısından Türk Devriminin temellerini, Türk devrimin tarihi gelişimi, zamandizinsel eksende karşılaştırmalı olarak ele alınarak, Tam bağımsızlık ve Ulusal egemenlik kavramlarını irdelemekte, verilen savaşım genç bireylere aktarılmaktadır.
DERSİN AMAÇLARI	Öğrencilerin, Atatürk ilke ve devrimlerine bağlı, laik, demokratik ve çağdaş değerleri benimseyen ve koruyan bireyler olarak yetişmelerini sağlamak. Bu ders boyunca öğrencilere, demokrasinin çağımızın en iyi yaşam tarzı olduğu kavratılır, demokrasinin korunması ve geliştirilmesi bilinci kazandırılır.
DERSİN MESLEK EĞİTİMİNİ SAĞLAMAYA YÖNELİK KATKISI	Kişilik gelişimini tamamlama sürecinde tam bağımsızlık ve ulusal egemenlik kavramları ile bilinçlenme işleminin tamamlanmaktadır. Dersin genel anlamda, kendini gerçekleştiren, kültürlü, gündeme duyarlı olan eleştirel yaklaşımı benimsemiş, yapıcı ve çözüm odaklı birey oluşturma sürecinde katkısı gözlenmiştir
DERSİN ÖĞRENİM ÇIKTILARI	Sosyal bilimlere ilişkin bilgilerini uygulama becerisi Verileri analiz edebilme, değerlendirebilme ve tasarlama becerisi Disiplinler arası bir takıma liderlik edebilme becerisi Yaşama karşılaştırmalı bakabilme becerisi, mesleki ve etik sorumluluğu anlama, etkin yazılı ve sözlü iletişim becerisi Verilerin ulusal ve küresel tesiri ile sonuçlarını anlama becerisi Hayat boyu öğrenimin önemini kavrama ve uygulama becerisi Mesleki güncel konuları izleme becerisi Bağımsız ya da danışman yönetiminde bilimsel araştırma yapabilme becerisi
TEMEL DERS KİTABI	Gazi Mustafa Kemal Atatürk, Nutuk (Söylev), C. I-II, TTK., Ankara, 1986.
YARDIMCI KAYNAKLAR	Fatma Acun (Ed.), Atatürk ve Türk İnkılâp Tarihi, Ankara, 2010. Niyazi Berkes, Türkiye'de Çağdaşlaşma, İstanbul, 1978. Enver Ziya Karal, Atatürk ve Devrim (Konferanslar ve Makaleler), TTK., Ankara, 1980. Enver Ziya Karal, Atatürk'ten Düşünceler, MEB. Yay., Ankara, 1981. Bernard Lewis, Modern Türkiye'nin Doğuşu, Çev.M.Kıratlı, TTK., Ankara, 1970. Ahmet Mumcu, Tarih Açısından Türk Devriminin Temelleri ve Gelişimi, Ankara, 1976.
DERSTE GEREKLİ ARAÇ VE GEREÇLER	Projeksiyon Makinesi, Harita, Fotoğraf, İstatistikî Tablolar, Grafikler

DERSİN HAFTALIK PLANI	
HAFTA	**İŞLENEN KONULAR**
1	Türk İnkılâbının Stratejisi
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9	Ara sınav
10	Sosyal Yapıda ve Sağlık Alanında İnkılâplar
11	Türkiye Cumhuriyeti'nin Dış Politikası
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14	Yükseköğretim Alanındaki Faaliyetler ve Üniversite Reformu
15,16	Yarıyıl sonu sınavı

NO	PROGRAM ÇIKTISI	4	3	2	1
1	Matematik, fen bilimleri ve Elektrik-Elektronik Mühendisliği konularında yeterli bilgi birikimi; bu alanlardaki kuramsal ve uygulamalı bilgileri Elektrik-Elektronik Mühendisliği problemlerini modelleme ve çözme için uygulayabilme becerisi.				**X**
2	Elektrik-Elektronik Mühendisliği ve ilgili alanlarda karmaşık mühendislik problemlerini saptama, tanımlama, formüle etme ve çözme becerisi; bu amaçla uygun analiz ve modelleme yöntemlerini seçme ve uygulama becerisi.				**X**
3	Gerçekçi kısıtlar ve koşullar altında ve belirli gereksinimleri kapsayacak şekilde Elektrik-Elektronik Mühendisliğini ilgilendiren karmaşık bir sistemi, cihazı veya ürünü modern tasarım yöntemlerini uygulayarak tasarlama becerisi.				**X**
4	Elektrik-Elektronik Mühendisliği uygulamaları için gerekli olan modern teknik ve araçları geliştirme, seçme ve kullanma becerisi; bilişim teknolojilerini etkin bir şekilde kullanma becerisi.				**X**
5	Elektrik-Elektronik Mühendisliği problemlerinin incelenmesi için deney tasarlama, deney yapma, veri toplama, sonuçları analiz etme ve yorumlama becerisi				**X**
6	Disiplin içi ve çok disiplinli takımlarda etkin biçimde çalışabilme becerisi; bireysel çalışma becerisi.		**x**		
7	Türkçe ve İngilizce sözlü ve yazılı etkin iletişim kurma becerisi.		**x**		
8	Yaşam boyu öğrenmenin gerekliliği bilinci; bilgiye erişebilme, bilim ve teknolojideki gelişmeleri izleme ve kendini sürekli yenileme becerisi	**x**			
9	Mesleki ve etik sorumluluk bilinci		**x**		
10	Proje yönetimi ile risk yönetimi ve değişiklik yönetimi gibi iş hayatındaki uygulamalar hakkında bilgi; girişimcilik, yenilikçilik ve sürdürebilir kalkınma hakkında farkındalık.				**x**
11	Mühendislik uygulamalarının evrensel ve toplumsal boyutlarda sağlık, çevre ve güvenlik üzerindeki etkileri ile çağın sorunları hakkında bilgi; mühendislik çözümlerinin hukuksal sonuçları konusunda farkındalık.				**x**

Dersin program çıktılarına katkısı hakkında değerlendirme için:

4:Yüksek 3: Orta 2: Az 1: Hiç

Hazırlayan öğretim üyesi/üyeleri:

İmza(lar):

Tarih:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151222201 **COURSE TITLE:** CALCULUS II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
2	4	0	4	5	Compulsory (x) Elective ( )	Turkish ( ) English (X)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
4	0	( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	4	10	Lab performance		
	Homework	4	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final			50			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Polar coordinates. Curvilinear coordinate systems. Vectors. Partial derivatives. Vector differential operators. Multiple integrals. Integration in vector fields.
Objectives of the course	Main objective of this course is to teach students basic concepts, theorems of calculus and provide them the ability to solve mathematical problems.
Contribution of the course towards professional education	By taking this course, the students gain necessary mathematical background for engineering courses and their professional lives.
Outcomes of the course	1. Defining coordinate systems and vectors. 2. Solving problems with partial derivatives. 3. Defining vector differential operators. 4. Solving problems with multiple integrals. 5. Defining integral theorems related to vector fields. 6. Solving problems with line and surface integrals.
Textbook of the course	George B. Thomas Jr., Thomas' Calculus, 12th edition, Pearson Publications, 2009.
Other reference books	- Abdülkadir Özdeğer ve Nursun Özdeğer, Çözümlü Yüksek Matematik Problemleri Cilt I, İTÜ Fen Fakültesi Yayınları, 1994. - Ahmet A. Karadeniz, Yüksek Matematik Cilt: 2, 9. Baskı, Çağlayan Kitabevi, 2007. - Ahmet A. Karadeniz, Yüksek Matematik Cilt: 3, 8. Baskı, Çağlayan Kitabevi, 2004.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Parametric curves.
2	Polar coordinates. Graphing in polar coordinates.
3	Vectors. Dot product. Cross product. Curvilinear coordinate systems.
4	Functions of several variables. Limits and continuity. Partial derivatives.
5	Partial derivative. Chain rule. Directional derivatives.
6	Extreme values and saddle points. Lagrange multipliers.
7	Gradient, divergence and curl operators.
8	Midterm
9	Midterm
10	Double integrals and their applications.
11	Triple integrals and their applications.
12	Line and surface integrals.
13	Line and surface integrals.
14	Green's theorem in the plane. Gauss' and Stokes' theorems.
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Asst. Prof. Dr. Özge YANAZ ÇINAR

Signature(s):

Date:

COURSE INFORMATION FORM

SEMESTER	Spring

COURSE CODE	151222197	COURSE NAME	CALCULUS II

SEMESTER	WEEKLY COURSE PERIOD			COURSE			
	THEORY	PRACTISE	LABORATORY	Credit	ECTS	TYPE	LANG.
Spring	3	2	2	4	5	Required	EN

COURSE CATEGORY (Credit Distribution)				
Basic Science	Basic Engineering	Includes Design	Electrical-Electronics Engineering	Social Science
5				

ASSESMENT CRITERIA			
EXAM NAME		EVALUATION TYPE	%
IN TERM EXAMS	1st Mid Term	WRITTEN	20
	2nd Mid Term	WRITTEN	20
	Other Exam 1	SEMINAR	20
	Other Exam 2	---	0
	Other Exam 3	---	0
	Other Exam 4	---	0
	Other Exam 5		
	Other Exam 6		
	Other Exam 7		
	Other Exam 8		
FINAL EXAM		WRITTEN	40
EXCUSE EXAM			

PREREQUISITE(S)	
COURSE DESCRIPTION	Sequences, series, vectors, quadratic surfaces, implicit functions, linear programming, linear regression, double integrals, triple integrals, cylindrical and spherical coordinates, gradient, curl, Green s and Stoke s Theorems
COURSE OBJECTIVES	To supply the necessary background for students to analyze and solve mathematical problems which they may encounter in latter classes.
CONTRIBUTION TOWARDS PROFESSIONAL EDUCATION	Students will learn some further concepts of mathematics such as sequences, series, vector calculus, multiple integrals to use in latter engineering classes.
COURSE OUTCOMES	To gain the ability to use and interpret fundamental mathematical concepts
TEXTBOOK	Calculus, A Complete Course-Fifth Edition, Robert A. Adams, Addison-Wesley, 2001
OTHER REFERENCES	1) Calculus and Analytic Geometry, 9th Edition, G. B. Thomas,Jr., R. L. Finney, Addison-Wesley, 1998. 2) Calculus the Maple Way, Robert B. Israel, Addison-Wesley, 2000.
TOOLS AND EQUIPMENTS REQUIRED	

COURSE SYLLABUS	
WEEK	**TOPICS**
1	Polar coordinates, sequences
2	Infinite series, power series
3	Taylor series, Fourier series
4	Vectors, cross product, quadric surfaces
5	Vector functions, parametrizations
6	MID TERM EXAMINATION 1
7	Limits and continuity, partial differentiation
8	Chain rule, linear approximations, gradients
9	Implicit functions, Taylor series approximations
10	Extreme values, linear programming, linear regression
11	MID TERM EXAMINATION 1
12	Double integrals, triple integrals, cylindrical, spherical coordinates
13	Vector fields, conservative fields line integrals, surface integrals
14	Gradient, divergence, curl, Green`s and Stokes`s theorems
15,16	FINAL EXAM

NO	PROGRAM OUTCOMES	SUPPORT LEVEL
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	4 High
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	4 High
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	3 Medium
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	2 Less
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	1 None
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	1 None
7	Communicating effectively in oral and written form both in Turkish and English.	1 None
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	2 Less
9	Understanding of professional and ethical responsibility	1 None
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1 None
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1 None

PREPARED BY	SIGNATURE	DATE
Asst.Prof.Dr.SEMİH ERGİN		12/12/2012

Go Back

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151222137 **COURSE TITLE:** COMPUTER PROGRAMMING

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
2	2	2	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (X)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz	3	15
	Quiz			Lab performance		15
	Homework			Report		
	Project			Oral exam		
	Other(laby)	1	40	Other (Final)		10
Final			30			
Makeup exam (Oral/Written)	written					

Prerequisites	Basic Programming Knowledge
Brief content of the course	This course, structured program design and implementation of programs to be used for the C language is the language of the program includes advanced applications such as arrays, pointers, structures, files and link list.
Objectives of the course	The aim of the course is to teach the C programming language, the ability to write programs using the advanced level
Contribution of the course towards professional education	• Learn what software development is and what software developers do. • Learn programming concepts and terminology to facilitate ommunication with software developers. • Learn to read, trace, and understand simple code. Learn to write, test, and debug code to solve a simple problem. • Evaluate their personal aptitude for career as a programmer or software developer.
Outcomes of the course	Students who successfully complete this course: • Describe a typical computer system and its critical components. • Describe the software development process, its purpose, critical steps, and where programming fits in that process. • Describe the evolution of common characteristics of, and differences among, modern programming languages. • Describe the architectural aspects of a software application. • Identify a problem that requires a programmed solution.
Textbook of the course	A. Kelley, I. Pohl, A Book on C, Addison Wesley,1995
Other reference books	International Standard, Programming Languages; C, ©ISO/IEC ISO/IEC 9899:1999 (E)
Required material for the course	Visual Studio

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Summary of introduction to programming
2	Strings
3	Pointers
4	Pointer / Array
5	Dynamic memory allocation
6	specifiers
7	structures
8	Midterm
9	Midterm
10	typdef
11	union
12	Macro
13	Files
14	Link List
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.		**x**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering			**x**	
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Osman Parlaktuna

Signature(s):

Date: 02.03.2016

ESOGÜ Electrical Engineering Department

COURSE CODE: 151222126 **COURSE TITLE:** Engineering Graphics

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
2	1	2	2	4	ZORUNLU (x) SEÇMELİ ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
2	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	3	30	Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Technical drawing, computer aided drawing and design.
Objectives of the course	The aim of the course is to teach students basic structures about computer-aided design and drawings, to draw two and three dimensional projects in computer environment with using AutoCAD program.
Contribution of the course towards professional education	Apply primary techniques in engineering drafting practices and CAD software application, visualize objects from multiview drawings, sketch objects in multiview and pictorial views. Using AutoCAD or other CAD software efficiently for 2-dimensional, 3-dimensional drawings, use pictorial drafting techniques as a tool for communication, visualization, critical thinking, and problem solving.
Outcomes of the course	1- To understand basics of technical drawing. 2- To know standards about technical drawing. 3- To create technical drawings by using AutoCAD. 4- Modeling. 5- To develop technical drawing project.
Textbook of the course	Omura G., "Herkes için AutoCAD 2007 ve AutoCAD LT 2007", 2007, ISBN: 9752978461
Other reference books	
Required material for the course	Computer, projector.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Multiview sketching.
2	Orthogonal, sectional, and auxiliary views
3	Projections
4	Assembly drawings
5	Drawings standards, dimensioning, tolerancing and fits
6	What is Computer-Aided Design (CAD)?
7	Properties of CAD programs
8	Midterm
9	Midterm
10	Running AutoCAD, AutoCAD screen, entire window
11	Toolbars, Zoom operations, AutoCAD commands, coordinates
12	Layer operations, making layers, adding objects to layers, general controls of layers.
13	Dimensioning, Text operations, Block operations.
14	Three-dimensional modeling, wire-frame modeling, surface modeling, solid modeling.
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Computer Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Computer Engineering		**X**		
2	Ability to identify complex engineering problems in Computer Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Computer Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Engineering applications, skills to use information technology effectively.		**X**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Computer Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form in Turkish and one foreign language.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Yıldıray ANAGÜN

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151222148 **COURSE TITLE:** LINEAR ALGEBRA

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
2	3	0	3	4	Compulsory (x) Elective ( )	Turkish ( ) English (X)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	3	30	Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Linear equations and matrices, solving linear systems, vector spaces, inner product spaces, linear transformations, determinants, eigenvalues and eigenvectors
Objectives of the course	To be able to use matrices and vectors, to apply basic methods to solve linear systems, to make matrix and vector operations in n-dimensional space, to be able to make eigen-decomposition.
Contribution of the course towards professional education	In this course students learn how to use matrices and vectors in order to solve related basic engineering problems. Also this course is necessary to understand the important topics taught in the other Electrical and Electronics engineering classes.
Outcomes of the course	1) Students can find the solution of linear equation and system. 2) Students can use matrices and vectors in confidence. 3) Students can easily find a vector sets spanning different real vector spaces. 4) Students can make eigen-decomposition on matrix.
Textbook of the course	B. Kolman, D. R. Hill, *Elementary Linear Algebra*, Prentice Hall, 8th edition, 2004.
Other reference books	1) D. C Lay, *Linear Algebra and Its Applications*, Addison Wesley Longman, Inc., 2n edition 1997. 2) D. Poole, *Linear Algebra - a Modern Introduction*, Thomson Brooks/Cole, 2006
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Linear systems and matrices
2	Solving linear systems
3	Special matrices and finding inverses
4	LU decomposition
5	Vector Spaces
6	Subspaces and linear independence
7	Span and linear independence
8	Midterm
9	Midterm
10	Homogeneous systems
11	Inner product spaces
12	Linear Transformations and transformation matrices
13	Determinants
14	Eigenvalues and eigenvectors
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**x**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**x**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**x**		
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**x**		
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151222198 **COURSE TITLE:** Physics II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
2	3	0	3	3	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
3	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	40	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (Present.)			Other (……)		
Final		1	60			
Makeup exam (Oral/Written)	Oral					

Prerequisites	Physics I
Brief content of the course	Electric charge; electric fields; Gauss' law; electric potential; capacitance and dielectrics; current and resistance; electromotive force and circuits; magnetic field; Biot-Savart law, Ampere's law; Faraday's law; inductance; electromagnetic oscillations; alternating current; Maxwell's equations.
Objectives of the course	To introduce fundamental concepts and principles related to the electricity and magnetism and provide an understanding of these principles with applications from the real world.
Contribution of the course towards professional education	Identify, formulate, and solve problems analytically that appear in physical systems; in general develop problem solving skills.
Outcomes of the course	18. Know fundamental concepts and principles related to the electricity and magnetism. 19. Identify, formulate, and solve problems analytically that appear in physical systems. 20. Analyze and resolve natural phenomenon. 21. Associate the gained knowledge, analyze and interpret data. 22. Apply and link the gained knowledge of natural sciences to interdisciplinary fields. 23. Correlate and apply gained knowledge directly with technology and industry. 24. Use techniques and skills necessary for engineering practice.
Textbook of the course	**3. Halliday, D., Resnick, R., and Walker, J. (2008).** Fundamentals of Physics (8th Edition). John Wiley & Sons, Inc. 1. Serway, R.A., Beichner, R.J., **Physics For Scientists and Engineers with Modern Physics (2007)**, Harcourt College Publishers
Other reference books	1. **Giancoli, D.C. (2004).** Physics: Principles with Applications (6th Edition). Pearson Education Inc. 2. **Young, H.D, Freedman, R.A. (2006).** University Physics Volume 1 (12th Edition). Pearson/Addison Wesley.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Elektric Charge and Coulmb's Law
2	The Electric Field
3	Gauss Law
4	Gauss Law
5	Electric Potential
6	Capacitance
7	Dielectrics
8	Midterm
9	Midterm
10	Current and Resistance
11	DC Circuits
12	The Magnetic Field
13	Biot -Savart Law and Ampere's Law
14	Faraday's Law of Induction
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**X**			
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing			**X**	
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.			**X**	

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): M. Celalettin Baykul

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151222199 **COURSE TITLE:** Physics Laboratory II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
2	0	2	1	2	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
1	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm			Quiz		
	Quiz			Lab performance		
	Homework			Report	7	50
	Project			Oral exam		
	Other (……)			Other (……)		
Final					1	50
Makeup exam (Oral/Written)				Oral		

Prerequisites	
Brief content of the course	Electrolysis; magnetic force; Ohm's law; Wheatstone bridge; transformer; frequency; light absorption coefficient.
Objectives of the course	To strengthen insights into the fundamental concepts of physics related to Newtonian mechanics through direct investigations and provide hands-on experience.
Contribution of the course towards professional education	Enhance observational and analytical skills.
Outcomes of the course	25.Enhance observational and analytical skills. 26.Develop an appreciation for qualitative and quantitative reasoning. 27.Develop physical curiosity. 28.Develop team skills. 29.Make measurements with common instruments. 30.Make objective observations of physical phenomena. 31.Draw conclusions based on observations and data. 32.Analyze quantitative information using sketches, graphs, tables, and statistics. 33.Conduct quantitative and qualitative discussions of observational errors. 34.Produce a lab report.
Textbook of the course	Physics II Experiments. Eskisehir Osmangazi University Publications, Yrd.Doç.Dr. Sertaç Eroğlu, Dr. Murat Kellegöz, Dr. Gökhan Kılıç, Halil Yasin Adıyaman.
Other reference books	**4. Halliday, D., Resnick, R., and Walker, J. (2008).** Fundamentals of Physics (8th Edition). John Wiley & Sons, Inc. **5.** Serway, R.A., Beichner, R.J., **Physics For Scientists and Engineers with Modern Physics (2007)**, Harcourt College Publishers
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	
2	
3	Lab introduction
4	Electrolysis
5	Magnetic force
6	Ohm's law
7	Wheatstone bridge
8	Mid-term week – no experiment
9	Mid-term week – no experiment
10	Transformer
11	Frequency
12	Light absorption coefficient
13	
14	
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**X**		
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems		**X**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**X**		
7	Communicating effectively in oral and written form both in Turkish and English.			**X**	
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): M. Celalettin Baykul

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151222136 **COURSE TITLE:** Technical Writing

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
2	3	0	3	4	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )	3	

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	30	Quiz		
	Quiz			Lab performance		
	Homework	5	30	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final			40			
Makeup exam (Oral/Written)						

Prerequisites	Expository Writing
Brief content of the course	Borrowing information from sources, direct quote, paraphrase, summary, in-text citations, use of index cards, reliability of the sources, outline, introduction paragraph, body and conclusion paragraphs, MLA style for references, page layout, writing a 5-6 page paper on topics related to health, environment and energy sources.
Objectives of the course	Teaching how to access sources Teaching how to cite and document sources Teaching how to write an academic paper Awareness about plagiarism Writing a paper on current issues that concern the society including health, environment and energy issues.
Contribution of the course towards professional education	Development of written communication skills, Introduction to Professional authorship Acquiring awareness about environment, health and energy issues through the research and writing
Outcomes of the course	Development of writing skills for summaries, paraphrases, and direct quotes, planning for a paper, and documenting the sources that the information is borrowed from.
Textbook of the course	Dartmouth University Online Writing Materials for Students by Karen Gocsik, 2004.
Other reference books	Ellen Lipp, *From Paragraph to Term Paper*, Macmillan, James D. Lester, *Writing Research Papers: A Complete Guide*, Addison Wesley, 1998
Required material for the course	30 index cards Ruled sheets of paper

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the course
2	Sources of Information
3	Critical analysis of sources
4	Borrowing information from sources
5	Forms of borrowed information
6	Blending source information into own writing
7	Research for the topic
8	Midterm
9	Midterm
10	Developing a thesis statement
11	Planning and Organization
12	Synthesis
13	Revision
14	Printed page format and course review
15,16	Final Exam

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.	**X**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	**X**			
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	**X**			

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Prof. Dr. Hasan H. Erkaya

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151221182 **COURSE TITLE:** TURKISH II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
2	2	0	0	2	Compulsory (x) Elective ( )	Turkish (x) English ()

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )	2	

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	-
Brief content of the course	The contents of this course are word information, word sorts, sentence and word order of Turkish, composition, kinds of oral and written composition, oral and written narration techniques, present problems of Turkish, text (poetry, novel, story, article, etc.) analyzing methods.
Objectives of the course	The subject of the course is to expose the value of Turkish language by giving information about development of Turkish language, to gain national language awareness, to develop reading and writing skills, to compare and contrast Turkish language to other languages, to compare and contrast language policy of developed countries to Turkish language policy, to gain skill of speaking.
Contribution of the course towards professional education	15. Learn Turkish grammar 16. Develop the ability of using Turkish properly 17. Gain knowledge of present problems of Turkish 18. Be able to read and comprehend 19. Learn text analyzing methods 20. Learn about the Turkish language policy and be able to make comments on improving the policy 21. Gain writing skill 22. Gain speaking skill 23. Learn narration techniques 24. Be able to pronounce vowels 25. Be able to read phonetically right 26. Be able to write compositions 27. Be able to write on his/her ideas 28. Be able to talk on his/her ideas
Outcomes of the course	
Textbook of the course	1. Ergin, M. (1997). Üniversiteler İçin Türk Dili. İstanbul: Bayrak Yayınları 2. Kaplan, M. (1993). Kültür ve Dil. İstanbul: Dergâh Yayınları (8. baskı) 3. Fuat, M. (2001). Dil Üstüne. İstanbul: Adam Yayınları 4. Aksan, D. (1984). Türkçe'nin Gücü. Ankara: Bilgi Yayınevi (4. baskı) 5. Karamanlıoğlu, A. F. (1984). Türk Dili. İstanbul: Dergâh Yayınları 6. Anday, M. C. (1996). Dilimiz Üstüne Konuşmalar. İstanbul: Yapı Kredi Yayınları 7. Karaağaç, G. (2002). Dil Tarih ve İnsan. Ankara: Akçağ Yayınevi 8. Aksan, D. (2003). Dil Şu Büyülü Düzen. Ankara: Bilgi Yayınevi

	9. Banarlı, N. S. (2002). Türkçe'nin Sırları. İstanbul: Kubbealtı Neşriyatı 10. Parlatır,İ. & Korkmaz, Z. & Gülensoy, T. & Zülfikar, H. & Birinci, N. (2005). Türk Dili ve Kompozisyon. Ankara: Ekin Yayınları
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Word information
2	Word sorts
3	Sentence and word order of Turkish
4	Sentence and word order of Turkish
5	Composition
6	Composition
7	Kinds of oral and written composition
8	Midterm
9	Midterm
10	Oral and written narration techniques
11	Oral and written narration techniques
12	Present problems of Turkish
13	Text (poetry, novel, story, article, etc.) analyzing methods
14	Text (poetry, novel, story, article, etc.) analyzing methods
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English.	**x**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**x**		
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223559 **COURSE TITLE:** Advanced Calculus

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
3	4	0	4	7	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
0	4	( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)	Written					

Prerequisites	Calculus I
Brief content of the course	Complex numbers, algebraic properties, geometric properties. Regions in the complex plane, functions of a complex variable, mappings, limits, continuity Derivatives, Cauchy-Riemann equations, analytic functions. Elementary functions, complex exponents. Cauchy Goursat theorem, Cauchy integral formula. Series, Taylor series, Laurent series, residues. Residues at poles, improper integrals. First order differential equations, higher order linear differential equations, order reduction. Constant coefficient differential equations, Variation of parameters, Cauchy diff. eqns. Power series solutions of the differential equations, Laplace transformations in solving differential equations. Eigenstructures in solving differential equations. Sturm-Liouville Boundary Value Problems
Objectives of the course	Generalizing the freshman calculus concepts to multivariable functions. Understanding and solving elementary classes of differential equations using variety of tools.
Contribution of the course towards professional education	Electromechanic system models often require a reasonable level knowledge of complex calculus tools and differential equation solving abilities. This course introduces a fairly large spectrum of these topics.
Outcomes of the course	Students who successfully complete this course 1) Use complex calculus tools. 2) Solve certain classes of differential equations analytically and large class of them numerically.
Textbook of the course	1) R.V. Churchill and J.W. Brown, Complex Variables and Applications, Mc GrawHill, 6-th Edition 1984 2) S. L. Ross, Differential Equations, 3rd Edition, Wiley, 1984
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Complex numbers, algebraic properties, geometric properties
2	Regions in the complex plane, functions of a complex variable, mappings, limits, continuity
3	Derivatives, Cauchy-Riemann equations, analytic functions
4	Elementary functions, complex exponents
5	Cauchy Goursat theorem, Cauchy integral formula
6	Series, Taylor series, Laurent series, residues
7	Residues at poles, improper integrals
8	Midterm
9	Midterm
10	First order differential equations, higher order linear differential equations, order reduction
11	Constant coefficient differential equations, Variation of parameters, Cauchy diff. eqns.
12	Power series solutions of the differential equations, Laplace transformations in solving differential equations,
13	Eigenstructures in solving differential equations
14	Sturm-Liouville Boundary Value Problems
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		√		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		√		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223555 **COURSE TITLE:** Circuit Analysis I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
3	4	0	4	6	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
0	4	( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	3	30	Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Current, voltage, power, energy. Resistor. Sources. Ohm and Kirchoff's Laws, Circuit Analysis techniques (Node voltage, mesh current, Thevenin and Norton Theorems, superposition, source transformation). OPAMP, Capacitor and inductor. RL and RC circuits, Transient response. Step response. Transient and step response of RLC circuits. Sinusoidal forcing function. Analysis of sinusoidal circuits. Power calculations in sinusoidal circuits
Objectives of the course	Introducing elements of circuits, teaching circuit analysis methods. Analysing direct current circuits. Analysis of RL, RC, and RLC circuits. Sinusoidal circuits, power calculations in sinusoidal circuits.
Contribution of the course towards professional education	In this course students will learn basic elements of electrical circuits ve analyze direct current circuits and altenative current circuits. This course establishes a background for other courses in the Electrical Engineering curriculum
Outcomes of the course	At the end of this course, Students 1) Can analyze a dc circuit and calculate current, voltage, power, and energy of an element in the circuit. 2) Recognize basic elements used in the electrical circuits. 3) Apply electrical circuit analysis methods. 4) Can analyze an ac circuit and calculate current, voltage, power, and energy of an element in the sinusoidal circuit.
Textbook of the course	Nilsson, J. W. and S. A. Riedel, Electric Circuits, Pearson Prentice Hall Inc., 9th Ed. 2009.
Other reference books	1) Hayt, W.H., Jack E. Kemmerly, Steven M. Durbin, Engineering Circuit Analysis, Mc Graw Hill, 6th Ed. 2002 2) Richard C. Dorf, James A. Svoboda Introduction to Electric Circuits, Wiley, 7th Ed. 2006
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Current, volatge, power, energy definitions. Sources, resistor, Ohm's law. Kirchoff Laws.
2	Basic resitor circuits, series and paralel resistors. Delta-Y transformation. Node voltage method
3	Mesh current method. Thevenin and Norton theorems,
4	Maximum power transfer, Superposition, source transformation. OPAMP
5	Inductor and capacitor
6	Transient response of RL and RC circuits
7	Step response of RL and RC circuits
8	Midterm
9	Midterm
10	Transient response of RLC circuits
11	Step response of RLC circuits
12	Complete response of RL, RC, and RLC circuits
13	Sinusoidal forcing function. Analysis of sinusoidal circuits using phasors
14	Power calculations in sinusoidal circuits
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**x**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s):

Date: 08/03/2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223556 **COURSE TITLE:** Circuit Laboratory

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
3	0	2	1	2	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
0	1	(√)	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm			Quiz		
	Quiz			Lab performance	7	35
	Homework			Report	7	20
	Project			Oral exam		
	Other (……)			Other (……)	7	15
Final					1	30
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Series and Parallel Connections, Power Calculations The Combination Circuits, Voltmeter Loading Thevenin's Theorem,The Wheatstone Bridge Signal Sources and Using the Oscilloscope, Capacitors& RC circuits& Inductors &RL Circuits Resonant Circuits Op-amp Circuits Voltage and Current Conversion Circuits
Objectives of the course	Teaching basic circuit connections and their power calculations. Teaching the working priciples of voltmeter loading, Thevenin Theorem, Wheatstone bridge circuits. Teaching how to use use signal sources and oscilloscope. Teaching working principles of RC, RL circuits and resonant circuits by giving the knowledge about capacitor and inductor specifications. Teaching the working principle of op-amp and voltage/current converters.
Contribution of the course towards professional education	Students use knowledge and the practical ability, which is related to fundamental circuit elements, circuits and their setup, in other courses such as Electronics Laboratory or application based Electrical Engineering Design.
Outcomes of the course	At the end of the course, students; 1) will learn the basic circuit connections and their power calculations. 2) will have knowledge about voltmeter loading, Thevenin theorem, working principle of Wheststone Bridge. 3) will learn how to use signal sources and oscilloscope. 4) will analyse RC and RL circuits by having knowledge about characteristics of capacitors and inductors. 5) will have knowledge about resonant circuits, op-amp, voltage/current converters.
Textbook of the course	Laboratory experiment manuals
Other reference books	
Required material for the course	Electronic experiment kit, Oscilloscope, Voltmeter, Signal Generator, and fundamental circuit elements specific to each experiment.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the Lab
2	Introduction to the course
3	Series and Parallel Connections, Power Calculations, The Combination Circuits, C-Voltmeter Loading
4	Thevenin's Theorem, The Wheatstone Bridge
5	Signal Sources and Using the Oscilloscope
6	Capacitors& RC circuits& Inductors &RL Circuits
7	Resonant Circuits
8	Midterm
9	Midterm
10	Op-amp Circuits
11	Voltage and Current Conversion Circuits
12	Practical Exam
13	Practical Exam
14	Practical Exam
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering	**x**			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**x**		
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.	**x**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s):

Date: 08/03/2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223557 **COURSE TITLE:** Digital Systems I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
3	4	0	4	7	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
0	3	(√)	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	40	Quiz		
	Quiz	3	20	Lab performance		
	Homework			Report		
	Project	1	10	Oral exam		
	Other (……)			Other (……)		
Final		1	30			
Makeup exam (Oral/Written)	Oral and Written					

Prerequisites	
Brief content of the course	Digital systems, Combinational Circuit Analysis and Design, Combinational Circuits (Decoder, Encoder, Multiplexer, Arithmetic), Hardware Description Language (HDL), Sequential Circuits Analysis and Design
Objectives of the course	The aim of the course is to introduce combinational and sequential circuit components and to teach analysis and design techniques for combinational and sequential circuits.
Contribution of the course towards professional education	Students recognize basic elements of digital systems and learn system design using combinational and sequential circuits. And also they know the use of HDL for digital circuit analysis and design.
Outcomes of the course	Students: 1. recognize elements of digital systems 2. define combinational circuits (logic gates, decoders, encoders, etc.) and can explain their functions. 3. analyze and design combinational circuits 4. defines storage elements (latches and flip-flops) and their functions 5. analyze and design sequential circuits. 6. defines programmable logic devices. 7. use HDL in simulation and design of the digital systems.
Textbook of the course	Logic and Computer Design Fundamentals, M.Mano and R.Kime, Prentice Hall, 2004, 4th edition.
Other reference books	Digital Design Principles and Practice, J.F. Wakerly, Prentice Hall 2001. Digital Design, M. Mano, Prentice Hall 2002.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Digital Computers and Information
2	Boolean Algebra and Karnough Maps
3	Logic IC Circuits and Combinational Logic Design
4	Programmable Implementation Technologies
5	Combinational Logic Functions and Circuits
6	Combinational Logic Implementations
7	Arithmetic Functions and Circuits
8	Midterm
9	Midterm
10	Combinational Circuits and HDL
11	Sequential Circuits, Latches and Flip-Flops
12	Sequential Circuit Analysis
13	Sequential Circuit Design
14	Sequential Circuits and HDL
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**X**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.		**X**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.		**X**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223558 **COURSE TITLE:** ELECTROMAGNETICS I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
3	3	0	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
0	3 ( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	30	Quiz		
	Quiz	4	10	Lab performance		
	Homework	4	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final			50			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Coulomb's law and static electric fields, electrostatic potential, Gauss' law, Laplace and Poisson equations, electrostatic phenomena in non-empty space, image principle, electrostatic energy, Lorentz force and static magnetic fields, Biot-Savart's law, vector potential, Ampere's law, magnetostatic phenomena in non-empty space, magnetostatic energy, magnetic circuits, Ohm's law, Maxwell's equations, Faraday's law of induction.
Objectives of the course	Teaching fundamental concepts of electrostatics and magnetostatics, magnetic circuits, Maxwell equations and their basic consequences.
Contribution of the course towards professional education	The purpose of the course is to provide an understanding on electromagnetic field theory which is one of the fundamentals of electrical engineering, ability to solve related engineering problems and thus, knowledge and ability to deal with electromagnetic field applications which could be encountered in professional life.
Outcomes of the course	1. Defining electric and magnetic fields, electrostatic and vector potentials and related laws. 2. Solving fundamental electrostatic and magnetostatic problems. 3. Defining Maxwell's equations.
Textbook of the course	Mithat İdemen, Elektromagnetik Alan Teorisinin Temelleri, İTÜ Vakfı Yayınları, 3. Baskı, 2006.
Other reference books	- Gökhan Uzgören, Alinur Büyükaksoy ve Ali Alkumru, Elektromagnetik Alan Teorisi Çözümlü Problemler Cilt I ve Cilt II, İTÜ Vakfı Yayınları, 2009. - John David Jackson, Classical Electrodynamics, 3rd edition, John Wiley and Sons Inc., 1999. - David K. Cheng, Field and Wave Electromagnetics, 2nd edition, Addison-Wesley Publishing Co., 1989. - David J. Griffiths, Introduction to Electrodynamics, 4th edition, Addison-Wesley Publishing Co., 2012.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Vector analysis. Fundamental concepts.
2	Coulomb's law and static electric fields. Field lines.
3	Coulomb's law and static electric fields. Field lines.
4	Gauss' law.
5	Electrostatic potential. Laplace and Poisson equations.
6	Electrostatic phenomena in non-empty space. Image principle.
7	Electrostatic energy. Concept of capacitance.
8	Midterm
9	Midterm
10	Lorentz force and static magnetic fields. Biot-Savart's law.
11	Vector potential. Ampere's law.
12	Magnetostatic phenomena in non-empty space. Magnetostatic energy. Ohm's law.
13	Magnetic circuits.
14	Maxwell's equations. Faraday's law of induction.
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**X**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Gökhan ÇINAR

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151224232 **COURSE TITLE:** Circuit Analysis II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
4	4	0	4	6	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
1	3	( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	30	Quiz		
	Quiz	3	30	Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	Circuit Analysis I
Brief content of the course	Sinusoidal steady-state response, phasor, sinusoidal power calculations , three-phase circuits, transformers, Laplace transform, applications of Laplace transform in circuit analysis. Frequency response, passive and active filters, Bode diagrams.
Objectives of the course	Teaching sinusoidal circuit response and sinusoidal power. Teaching three-phase circuits and transformers. Analysing circuits using Laplace transform. Teaching frequency response of the circuits, active and passive filters.
Contribution of the course towards professional education	In this course students learn how to analyse sinuoidally driven circuits, using Laplace transform in circuit analysis. Also, students learn frequency response and filters. These subjects prepare a background for other subjets of the electrical engineering curriculum.
Outcomes of the course	At the end of this course, Students 1) analyse sinusoidally-driven circuits, 2) analyse three-phase circuits and transformers, 3) know how to use laplace transform in circuit analysis, 4) analyse and design passive and active filters.
Textbook of the course	Nilsson, J. W. and S. A. Riedel, Electric Circuits, Pearson Prentice Hall Inc., 8th Ed. 2008.
Other reference books	1) Hayt, W.H., Jack E. Kemmerly, Steven M. Durbin, Engineering Circuit Analysis, Mc Graw Hill, 6th Ed. 2002 2) Richard C. Dorf, James A. Svoboda Introduction to Electric Circuits, Wiley, 7th Ed. 2006
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Sinusoidal steady state response. Phasors.
2	Analysis of AC circuits by phasor method.
3	AC power calculations. Average power, reactive power, complex power, power factor.
4	Balanced three-phase circuits. Analysis Y-Y connected circuit.
5	Analysis Y-Δ connected circuit. Power calculations in 3-phase circuits.
6	Transformers
7	Laplace transform.
8	Midterm
9	Midterm
10	Application of Laplace transformation in circuit analysis
11	Convolution, transfer function, impulse response
12	Frequency response, resonance circuits.
13	Passive filters, Bode diagrams
14	Active filters
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**x**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s):

Date: 08/03/2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 1512242555 **COURSE TITLE:** DIGITAL SYSTEMS II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
4	4	0	4	7	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
0	4	(√)	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	40	Quiz		
	Quiz	3	20	Lab performance		
	Homework			Report		
	Project	1	10	Oral exam		
	Other (……)			Other (……)		
Final		1	30			
Makeup exam (Oral/Written)						

Prerequisites	Oral and Written
Brief content of the course	Digital Systems I
Objectives of the course	Registers and register transfers, sequencing and control, memory basics, simple computer architecture, instruction set and assembly programming, input-output and communication.
Contribution of the course towards professional education	The aim of the course is to teach simple computer architecture and computer design basics.
Outcomes of the course	Student recognizes simple computer architecture, explains basic elements of the computer, and knows assembly programming basics and input-output communication techniques.
Textbook of the course	Students; 1. recognize simple computer architecture. 2. knows simple computer design basics. 3. defines memory operations and knows memory interface. 4. recognize computer architecture and explain the operation of computer. 5. defines instruction set and knows assembly programming basics. 6. recognize input-output communication techniques. .
Other reference books	Logic and Computer Design Fundamentals, M.Mano and R.Kime, Prentice Hall, 2004, 4th edition.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Registers and Register Design
2	RTL, Hardware Implementations of Microoperations
3	Register Transfer Structures and Register Design
4	Microprogrammed Control
5	Microprogrammed Control Design Examples
6	Memory Basics
7	Computer Design Basics: Datapath and ALU
8	Midterm
9	Midterm
10	Single-Cycle Computer Architecture (SCCA
11	Instruction Set and Assembly Programming
12	Multiple-Cycle Computer Architecture
13	Instruction Set Architecture
14	Input-Output and Communication
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**X**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.		**X**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE:151224298 **COURSE TITLE:** DIGITAL SYSTEMS LABORATORY

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
4	0	2	1	2	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
0	2 (√)		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm			Quiz		
	Quiz			Lab performance	8	70
	Homework			Report	8	30
	Project			Oral exam		
	Other (……)			Other (……)		
Final						
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Introduction to laboratory equipments, IC gates, digital system analysis using LogicWorks/Proteus ISIS , binary and decimal system, combinational circuits, counters, sequential circuits, digital system design using HDL and Xilinx, assembly programming.
Objectives of the course	Introduce tools and techniques used in digital circuit analysis and design. Use of combinational and sequential circuits in some applications. Teach HDL description of digital systems and assembly programming.
Contribution of the course towards professional education	Students can employ combinational and sequential circuits in digital system design. They can use HDL in simulation and design. They know assembly programming basics.
Outcomes of the course	Students; 1. recognize and employ the tools and techniques used in digital system design. 2. know IC gate implementation technologies. 3. describe digital system in HDL and can do simulations in Xilinx ISE. 4. know assembly programming basics.
Textbook of the course	Logic and Computer Design Fundamentals, M.Mano and R.Kime, Prentice Hall, 2004, 4th edition.
Other reference books	Digital Design Principles and Practice, J.F. Wakerly, Prentice Hall 2001.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Digital Systems Laboratory Equipments
2	IC Logic Gates
3	Digital Circuit Analysis with LogicWorks
4	Binary and Decimal Numbers
5	Combinational Circuit Design for Conversion
6	Arithmetic Circuits: Adders and Subtractors
7	Combinational Circuit Design with Multiplexers
8	Midterm
9	Midterm
10	Flip-Flops, Counters
11	Sequential Circuits
12	Combinational Circuits and HDL
13	Sequential Circuits and HDL
14	Microprocessors and Assembly Programming
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**X**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	**X**			
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.		**X**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151224556 **COURSE TITLE:** ELECTROMAGNETICS II

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
4	3	0	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
0	3 ( )	0	0

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm	1	30	Quiz		
	Quiz	4	10	Lab performance		
	Homework	4	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final			50			
Makeup exam (Oral/Written)						

Prerequisites	151224236 Electromagnetics I, 151244236 Electromagnetics I, 151223558 Electromagnetics I, 151243558 Electromagnetics I.
Brief content of the course	Maxwell's equations and wave equation. Monochromatic waves. Electromagnetic spectrum. Helmholtz equation. Plane waves. Polarization of plane waves. Reflection and transmission of plane waves. Waveguides.
Objectives of the course	Introduction of Maxwell's equations, teaching fundamental concepts and applications related to monochromatic and plane waves, waveguides.
Contribution of the course towards professional education	The purpose of the course is to provide knowledge on Maxwell's equations, wave equations, monochromatic and plane waves, waveguides and ability to analyze and solve applications of electromagnetic waves.
Outcomes of the course	1. Define Maxwell's equations. 2. Define monochromatic and plane waves. 3. Analyzing propagation, reflection and refraction of plane waves. 4. Analyzing waveguides. 5. Solve fundamental problems related to waveguides.
Textbook of the course	Mithat İdemen, Elektromagnetik Dalgaların Temelleri, Okan Üniversitesi Yayınları, 6. Baskı, 2012.
Other reference books	- Gökhan Uzgören, Alinur Büyükaksoy ve Ali Alkumru, Elektromagnetik Dalga Teorisi Çözümlü Problemler, Okan Üniversitesi Yayınları, 2012. - John David Jackson, Classical Electrodynamics, 3rd edition, John Wiley and Sons Inc., 1999. - David K. Cheng, Field and Wave Electromagnetics, 2nd edition, Addison-Wesley Publishing Co., 1989.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Maxwell's equations and wave equation. d'Alembert solution and state of reflection.
2	Fourier series solution of wave equation.
3	Monochromatic waves and electromagnetic spectrum.
4	Helmholtz equation.
5	General expression of plane waves and polarization.
6	Propagation of plane waves in different media.
7	Propagation of plane waves in different media.
8	Midterm
9	Midterm
10	Reflection and transmission of plane waves.
11	Reflection and transmission of plane waves.
12	Waveguides. TE, TM and TEM modes.
13	Parallel-plate waveguides. Waveguides with rectangular cross-section.
14	Waveguides with circular cross-section.
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**X**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Gökhan ÇINAR

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151224299 **COURSE TITLE:** Systems and Signals

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
4	3	0	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
1	2	( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	30	Quiz		
	Quiz	3	15	Lab performance		
	Homework	6	15	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Signals and Systems, Linear Time Invariant Systems, Fourier Series Representation of Periodic Signals, The Continuous-Time Fourier Transform, The Discrete-Time Fourier Transform, Time and Frequency Characterization of Signals and Systems, Sampling, Laplace Transform.
Objectives of the course	To learn continuous-time and discrete-time systems and their properties, to learn linear-time invariant systems and their properties, finding responses of linear time-invariant systems by using convolution, to learn how to find fourier series representation of periodic signals and fourier transforms of non-periodic signals, to describe sampling theorem, to learn how to find Laplace transform of signals.
Contribution of the course towards professional education	In this course students learn characteristics of continuous and discrete-time signals and systems, and they can analyze them in time and frequency domains.
Outcomes of the course	5) Students learn continuous-time and discrete-time signals and sytems. 6) Students can find the responses of linear time-invariant systems to different input signals by using convolution. 7) Students can find the Fourier series representation of periodic signals. 8) Students can determine the responses of LTI systems to periodic signal inputs. 9) Students can find the Fourier transform of non-periodic signals. 10) Students can analyze systems in both time and frequency domains. 11) Students learn the sampling theorem and they can apply it in practical applications. 12) Students can find the Laplace transform of systems and signals and they know characteristics of the Laplace transform.
Textbook of the course	V. Oppenheim and A.S. Willsky, Signals and Systems, Prentice-Hall, Inc. 1997, 2nd edition.
Other reference books	S. Haykin and B. Van Veen, Signals and Systems, John Wiley & Sons, Inc., 2003, 2nd edition.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction and Continuous and Discrete Time Signals and Systems
2	Properties of Continuous and Discrete Time Systems
3	Linear Time Invariant Systems and Convolution
4	Fourier Series for Periodic Signals
5	Continuous-Time Fourier Transform
6	Discrete-Time Fourier Transform
7	Discrete-Time Fourier Transform
8	Midterm
9	Midterm
10	Time and Frequency Characterization of Signals and Systems
11	Sampling
12	Discrete-Time Processing of Continuous-Time Signals
13	Laplace Transform
14	Analysis of LTI Systems Using Laplace Transform
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**x**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.			**x**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225335 **COURSE TITLE:** Electronics I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	3	0	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
	3 (x)			

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	2	20	Lab performance		
	Homework	4	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)						

Prerequisites	Circuit Analysis I
Brief content of the course	Introduction to electronics, operational amplifiers, diodes, bipolar junction transistors, field effect transistors, single stage amplifiers at mid frequencies, differential amplifiers
Objectives of the course	To emphasize the need for amplifiers Introduction of basic amplifier configurations Analysis and design of amplifier circuits
Contribution of the course towards professional education	The importance of linear amplifiers in the analog signal processing is emphasized in this course. The analysis and design of amplifier circuits are given.
Outcomes of the course	Students who successfully complete this course will be able to analyze the amplifier circuits for input resistance, output resistance and voltage gain. They could also calculate the current and power gains. Design approaches are also practiced.
Textbook of the course	A.S. Sedra and K.C. Smith, Microelectronic Circuits, 7th Ed. OUP, 2016. (Older editions are also welcome)
Other reference books	R. Jaeger and T. Blalock, Microelectronic Circuit Design, 3rd Ed. McGraw-Hill, 2006. D. Neamen, Microelectrnics Circuit Analysis and Design, 4th Ed. McGraw-Hill, 2010.
Required material for the course	An electronic calculator would be helpful

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to electronics, amplifier models
2	Ideal opamp and its applications
3	Real opamp and limitations
4	Diodes and applications
5	BJT principles and bias circuits
6	BJT amplifiers
7	Amplifier design
8	Midterm
9	Midterm
10	FET principles and bias circuits
11	FET amplifiers
12	Amplifier design
13	Differential amplifiers
14	Course review
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**X**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**X**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.			**X**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Asst. Prof. Dr. Faruk Dirisağlık

Signature(s):

Date: March 02, 2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226357 **COURSE TITLE:** Electronics Laboratory

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	0	2	1	2	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
	1	(x)		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm			Quiz		
	Quiz			Lab performance	7	50
	Homework			Report	7	30
	Project			Oral exam		
	Other (……)			Other (……)	7	20
Final						
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Semiconductor Diodes and Power Supply, A Battery Charger, BJT and BJT Biasing, Amplifiers with BJT, Wideband Amplifiers, Printed Circuit Board (PCB) Circuit Project
Objectives of the course	Introducing basic electronic components, Analyzing amplifiers Designing basic amplifier circuits with transistors
Contribution of the course towards professional education	Basic laboratory skills are emphasized, Basic electronic components are introduced, Amplifier design procedures are practiced, Printed circuit boards and their importance is explained, A circuit is built on printed circuit board.
Outcomes of the course	Students completing the course successfully will 1) Gain good laboratory skills 2) Learn how to write experiment reports 3) Design a power supply circuit 4) Design amplifier circuits 5) Make printed circuit boards.
Textbook of the course	Laboratory data sheets
Other reference books	Microelectronics Circuits by Sedra & Smith, (3rd or later edition)
Required material for the course	Electronic Experiment Unit, Oscilloscope, Voltmeter, Signal Sources, circuit components

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the course
2	Introduction to the lab
3	Semiconductor Diodes
4	Power Supply
5	A Battery Charger
6	BJT and BJT Biasing
7	Amplifiers with BJT
8	Midterm
9	Midterm
10	Wideband Amplifiers
11	Wideband Amplifiers
12	Printed Circuit Board (PCB) Circuit Project
13	Printed Circuit Board (PCB) Circuit Project
14	Printed Circuit Board (PCB) Circuit Project
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering		**x**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**x**		
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

H H Erkaya

Signature(s) **Date:** March 11, 2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225399/151245399 **COURSE TITLE:** Engineering Mechanics

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
3	3	0	3	4	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
3	( )		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)	Written					

Prerequisites	
Brief content of the course	Introduction, Basic principles of statics, Force systems (in plane and in space), Rigid bodies and equivalent systems of forces, Equilibrium of rigid bodies, Centroids and centers of gravity, Forces in beams, moment, shear and normal force diagrams, Moments of inertia, Basic principles of dynamics, Kinematics and kinetics, pure bending & Stress Analysis of rigid bodies, normal and shear stresses.
Objectives of the course	To study and analyze forces on a static particle, To study and analyze forces and moments on a static rigid body, To study and analyze forces/moments on/between multiple static rigid bodies, To study and analyze internal forces/moments in a static rigid body, To use computer programming to solve statics problems.
Contribution of the course towards professional education	To be able to identify, formulate and solve engineering problems, To recognize the need for continuing life-long learning, To apply the fundamental knowledge of science, mathematics and engineering principles, To be able to use engineering skills and tools in engineering practice, To be able to write effectively, To be able to work with, specialized applications of, computers in the performance of job functions.
Outcomes of the course	To be able to identify, formulate and solve engineering problems, To recognize the need for continuing life-long learning, To apply the fundamental knowledge of science, mathematics and engineering principles.
Textbook of the course	STATICS Hibbeler DYNAMICS Hibbeler
Other reference books	STATICS Beer & Johnston STATICS Meriam DYNAMICS Beer & Johnston
Required material for the course	Calculator, necessary instruments for drawings

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction, Basic principles of statics
2	Force systems (in plane and in space)
3	Rigid bodies and equivalent systems of forces
4	Equilibrium of rigid bodies
5	Centroids and centers of gravity
6	Structures , Truss Systems
7	Normal, shear and bending moment diagrams
8	Midterm
9	Midterm
10	Moments of inertia
11	Kinematics and kinetics
12	Pure bending
13	Shear stress
14	Normal and shear stresses of rigid bodies
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering		**x**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.		**x**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility		**x**		
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.			**x**	
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Nevzat KIRAÇ

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225405 **COURSE TITLE:** Introduction to Microcomputers

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	3	0	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	3 (3)		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	4	20	Lab performance		
	Homework	5	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Oral					

Prerequisites	Digital Systems II
Brief content of the course	Introduction to microcomputer architecture, Structure of 8085 MPU, Type of memory chips, Memory decoder circuits, I/O decoder circuits, Software and Intel 8085 MPU instruction set, Usage of stack memory, Interrupt structure, Some programmable ICs that are used in serial and parallel communication and their interfacing with 8085 MPU, Some frequently used other peripheral devices.
Objectives of the course	In this class, some fundamental structures about the 8-bit microcomputers are given. Student, who learn the subjects given in the class, will get any difficulty in learning higher level microprocessors.
Contribution of the course towards professional education	A student, who I successful in this class, can analyze and design small scale 8-bit microprocessor system with 8085 MPU. The student can also write the necessary firm-ware for the designed microprocessor system.
Outcomes of the course	An EE student who learnt the subjects given in this course can study the courses, where higher level microprocessor is thought, very easily.
Textbook of the course	Microprocessor Architecture, Programming, and Application with 8085 Ramesh S. Goankar, Prentice Hall Publishing Company, 2002
Other reference books	Microprocessor/Hardware Interfacing and Applications Barry B. Brey, Charles E. Merrill Publishing Company, 1884
Required material for the course	8085 simulator

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to microcomputers, Fundamental parts in a microprocessor, Memory, MPU, I/O
2	Memory types, Memory IC pin outs, 8085 MPU architecture, 8085 MPU pin out
3	Design of memory decoder circuitry, which contains various type and capacity memory ICs, ,via decoder ICs, Some detailed memory decoder circuit with decoder ICs examples.
4	Design of memory decoder circuitry by means of PROM memory chips, Some detailed memory decoder circuit with PROM ICs examples
5	Design of incompletely specified memory decoder circuits, comparison of incompletely specified decoder circuits with the completely specified ones in terms of cost and firm-ware writing, I/O decoders, Memory mapped I/O decoders, I/O mapped (isolated I/O) I/O decoders, Comparion of these two I/O decoder circuits, Solutions to detailed examples.
6	Preparation of a firm-ware, Tasks of an assembler compiler, Assembler compiler directives, 8085 instruction set, Some explanatory examples.
7	Subroutines, Usage of a subroutine, Stack memory and subroutines, Writing delay subroutines, Calculation of execution time for a delay subroutine, Some explanatory examples.
8	Midterm
9	Midterm
10	8085 interrupt structure, Pins of 8085 related with its interrupt structure, Detailed explanation of 8085 interrupt structure by means of a diagram.
11	Explanation of 8085 interrupt structure via a detailed system program, Realization of RST0, RST1,…..RST7 via a simple hardware (obtaining extra seven hardware interrupt pin)
12	Parallel communication between microcomputers, 8255 PIA IC and its operation modes, 8155 PIA and its operation modes, Necessary detailed examples
13	Serial communication between microcomputers, 8251 USART IC and its operation modes, Necessary detailed examples
14	Some widely used VDUs, Interfacing of (seven segment display) SSDs, 2x16 character based LCD, Their interfacings with 8085, Necessary detailed examples
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.		**X**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering		**X**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Salih FADIL

Signature(s): Prof. Dr. Salih FADIL **Date:**

COURSE INFORMATION FORM

SEMESTER	Fall

COURSE CODE	151225393	COURSE NAME	INTRODUCTION TO MICROCOMPUTERS

SEMESTER	WEEKLY COURSE PERIOD			COURSE			
	THEORY	PRACTISE	LABORATORY	Credit	ECTS	TYPE	LANG.
Fall	3	0	0	3	6	Required	EN

COURSE CATEGORY (Credit Distribution)				
Basic Science	Basic Engineering	Includes Design	Electrical-Electronics Engineering	Social Science
		1	2	

ASSESMENT CRITERIA			
EXAM NAME		EVALUATION TYPE	%
IN TERM EXAMS	1st Mid Term	WRITTEN	30
	2nd Mid Term	WRITTEN	30
	Other Exam 1		
	Other Exam 2		
	Other Exam 3		
	Other Exam 4		
	Other Exam 5		
	Other Exam 6		
	Other Exam 7		
	Other Exam 8		
FINAL EXAM		WRITTEN	40
EXCUSE EXAM			

PREREQUISITE(S)	
COURSE DESCRIPTION	Introduction to microcomputer architecture, Structure of 8085 MPU, Type of memory chips, Memory decoder circuits, I/O decoder circuits, Software and Intel 8085 MPU instruction set, Usage of stack memory, Interrupt structure, Some programmable ICs that are used in serial and parallel communication and their interfacing with 8085 MPU, Some frequently used other peripheral devices.
COURSE OBJECTIVES	In this class, some fundamental structures about the 8-bit microcomputers are given. Student, who learn the subjects given in the class, will get any difficulty in learning higher level microprocessors.
CONTRIBUTION TOWARDS PROFESSIONAL EDUCATION	A student, who I successful in this class, can analyze and design small scale 8-bit microprocessor system with 8085 MPU. The student can also write the necessary firm-ware for the designed microprocessor system.
COURSE OUTCOMES	An EE student who learnt the subjects given in this course can study the courses, where higher level microprocessor is thought, very easily.
TEXTBOOK	Microprocessor Architecture, Programming, and Application with 8085Ramesh S. Goankar, Prentice Hall Publishing Company, 2002
OTHER REFERENCES	Microprocessor/Hardware Interfacing and ApplicationsBarry B. Brey, Charles E. Merrill Publishing Company, 1884
TOOLS AND EQUIPMENTS REQUIRED	8085 simulator

COURSE SYLLABUS	
WEEK	**TOPICS**
1	Introduction to microcomputers, Fundamental parts in a microprocessor, Memory, MPU, I/O
2	Memory types, Memory IC pin outs, 8085 MPU architecture, 8085 MPU pin out
3	Design of memory decoder circuitry, which contains various type and capacity memory ICs, ,via decoder ICs, Some detailed memory decoder circuit with decoder ICs examples.Design of memory decoder circuitry, which contains various type and capacity memory I
4	Design of memory decoder circuitry by means of PROM memory chips, Some detailed memory decoder circuit with PROM ICs examples
5	Design of incompletely specified memory decoder circuits, comparison of incompletely specified decoder circuits with the completely specified ones in terms of cost and firm-ware writing, I/O decoders, Memory mapped I/O decoders, I/O mapped (isolated I/O)
6	MID TERM EXAMINATION 1
7	Preparation of a firm-ware, Tasks of an assembler compiler, Assembler compiler directives, 8085 instruction set, Some explanatory examples.
8	Subroutines, Usage of a subroutine, Stack memory and subroutines, Writing delay subroutines, Calculation of execution time for a delay subroutine, Some explanatory examples.
9	8085 interrupt structure, Pins of 8085 related with its interrupt structure, Detailed explanation of 8085 interrupt structure by means of a diagram.
10	Explanation of 8085 interrupt structure via a detailed system program, Realization of RST0, RST1,?..RST7 via a simple hardware (obtaining extra seven hardware interrupt pin)
11	MID TERM EXAMINATION 1
12	Parallel communication between microcomputers, 8255 PIA IC and its operation modes, 8155 PIA and its operation modes, Necessary detailed examples
13	Serial communication between microcomputers, 8251 USART IC and its operation modes, Necessary detailed examples
14	Some widely used VDUs, Interfacing of (seven segment display) SSDs, 2x16 character based LCD, Their interfacings with 8085, Necessary detailed examples
15,16	FINAL EXAM

NO	PROGRAM OUTCOMES	SUPPORT LEVEL
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	4 High
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	3 Medium
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	3 Medium
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	2 Less
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	2 Less
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	2 Less
7	Communicating effectively in oral and written form both in Turkish and English.	1 None
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	3 Medium
9	Understanding of professional and ethical responsibility	2 Less
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1 None
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1 None

PREPARED BY	SIGNATURE	DATE

Prof.Dr.SALİH FADIL		12/12/2012

Go Back

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225350 **COURSE TITLE:** Numerical Methods

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	3	0	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	4	30	Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Programming and algorithms. Error analysis. Root finding. Numerical solution of Linear systems. Optimization. Curve fitting, regression and interpolation. Numerical derivative and integral. Numerical solution of ordinary differential equations.
Objectives of the course	In this course, numerical solution of engineering problems is explained. The methods are programmed using MATLAB.
Contribution of the course towards professional education	Numerical solution and programming of engineering problems are emphasized.
Outcomes of the course	Students who successfully complete this course will be able to solve and program engineering problems numerically.
Textbook of the course	Steven C. Chapra, Raymond P. Canale, “Numerical Methods for Engineers”, McGraw-Hill, 7th ed., 2015.
Other reference books	Steven C. Chapra, “Applied Numerical Methods with MATLAB”, McGraw-Hill, 3rd ed., 2012. Amos Gilat, Vish Subramaniam, “Numerical Methods for engineers and Scientists”, Wiley, 3rd Ed., 2014. G.R. Lindfield, J.E.T. Penny, "Numerical Methods using MATLAB", Elsevier, 3rd Ed., 2012. C. Woodford , C. Phillips, "Numerical Methods with Worked Examples: Matlab Edition", Springer, 2nd ed., 2012.
Required material for the course	Computer and MATLAB software package

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Programming, flow charts and algorithms, Error analysis.
2	Truncation errors, Taylor Series, Introduction to MATLAB.
3	Finding roots of single-variable functions numerically. Bisection, False position, Fixed point iteration and Newton Raphson and Secant methods, roots of polynomials.
4	Numerical solution of linear system equations. Gauss Elimination, LU decomposition, Gauss-Seidel and Jacobi methods
5	Finding maximum and minimum values of single-variable functions. Golden section search, parabolic interpolation, Newton's method, Brent's method. Multi-dimensional optimization: Gradients and Hessians.
6	Curve Fitting: Least Squares Regression. Linear regression, polynomial regression, nonlinear regression.
7	Curve Fitting: Interpolation. Divided difference interpolating polynomials, Lagrange interpolating polynomials, Spline interpolation. Curve fitting by using Fourier Series.
8	Midterm Examination – week1
9	Midterm Examination – week2
10	Numerical integration: Trapezoidal rule, Simpson's Rules (1/3 and 3/8). Integration of equations: Newton Cote's algorithms, Romberg integration, Adaptive quadrature, Gauss quadrature, improper integrals.
11	Numerical differentiation: High accuracy divided difference formulas, Richardson extrapolation, numerical differentiation and integration with MATLAB.
12	Numerical solution of ordinary differential equations: Euler Methods, Runge-Kutta Methods, Stiffness, multistep methods.
13	Boundary value problems
14	Eigenvalue problems
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**X**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.	**X**			
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering		**X**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Yrd.Doç.Dr. H. Serhan Yavuz

Signature(s): **Date:** March 11, 2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225394 **COURSE TITLE:** Probability

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	3	0	3	4	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	3	30	Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Sets, axioms of probability, random variables and functions of random variables, expectation and moments, discrete distributions, continuous distributions, jointly distributed random variables and their functions.
Objectives of the course	To learn basic concepts of probability, to be able to analyze continuous and discrete random variables, to be able to compute the expected value and standard deviation of a distribution, to compute the probabilities related to the popular distributions.
Contribution of the course towards professional education	In this course students learn basic concepts of probability and develop mathematical background which is necessary for the related engineering courses.
Outcomes of the course	1) Students can solve probability problems related to the combinatorial analysis. 2) Students can analyze discrete and continuous random variables. 3) Students can compute the expected value and standard deviation of the well-known distributions and solve the related problems.
Textbook of the course	Sheldon Ross, A First Course in Probability, Prentice Hall, 7th edition, 2006.
Other reference books	1) J. L. Devore, Probability and Statistics, Thomson Brooks/Cole, 2004. 2) H. Stark, J. W. Woods, Probability and Random Processes with applications to Signal Processing, Pearson Education, 2002.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Combinatorial Analysis
2	Axioms of Probability
3	Conditional Probability and Independence
4	Discrete Random Variables
5	Expectation and Variance
6	The Bernoulli and Binomial Distributions
7	Continuous Random Variables
8	Midterm
9	Midterm
10	Normal Random Variable
11	Other Continuous Distributions
12	Jointly Distributed Random Variables
13	Independent Random Variables
14	Probability Distributions of Joint Random Variables
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**X**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.			**X**	
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering		**X**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s): Ass. Prof. Hakan Çevikalp

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225406 **COURSE TITLE:** Microcomputer Laboratory

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	0	2	1	2	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm			Quiz		
	Quiz			Lab performance	8	50
	Homework			Report	8	50
	Project			Oral exam		
	Other (……)			Other (……)		
Final						
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Assembly and C language programming, simulation and debugging, digital input and output,counter and timers, interrupts, text and grafic LCD, serial communication, ADC and DAC.
Objectives of the course	The aim of the course is to teach hardware and software development tools, assemly and C language programming, simulation and debugging methods, and parallel and serial interfaces.
Contribution of the course towards professional education	Students can use software and hardware development tools efficiently. They can design microcomputer-based system.
Outcomes of the course	Student; 1. can write assembly and C language programs. 2. can do software/hardware simulations. 3. learns debugging techniques. 4. learns different interface methods (digital, analog, parallel and serial) and can use in microcomputer-based system design.
Textbook of the course	M.A. Mazidi and J.G. Mazidi, The 8051 Microcontroller and Embedded Systems, Prentice Hall 2005.
Other reference books	M.J.Pont, Embedded C, Pearson Education, 2002
Required material for the course	Micro C Compiler veya Keil C51 IDE

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Laboratory Rules and Introduction to the Course
2	Introduction to Micro C/ Keil C51 IDE
3	Assembly Programming
4	C Programming
5	Digital IO -Switch and LED interface
6	Timer and Counter
7	Interrupts
8	Midterm
9	Midterm
10	Multiplexed Display
11	Text and Graphic LCD
12	Serial Communication
13	ADC and Temperature measurement
14	DAC and Signal Generation
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.		**x**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering		**x**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**x**		
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226374 **COURSE TITLE:** COMMUNICATIONS

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
6	3	0	3	5	Compulsory (x) Elective ( )	Turkish ( ) English(x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	3 ( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	30	Quiz		
	Quiz	3	20	Lab performance		
	Homework	3	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	151224299 SIGNALS AND SYSTEMS
Brief content of the course	Fundamentals of electronic communications, signal/noise power-energy, sampling and quantization, AM, VSB, SSB-SC AM, DSB-AM, FM, QAM, PM, PAM, TV principles, random processes, noise figure, matching filters, introduction to source coding, Shannon's theorems.
Objectives of the course	Learn the modulation techniques used in electronic communications, effects of noise, study on the methods for reducing the effects of noise,
Contribution of the course towards professional education	Students will get familiar with the techniques used in electronic communication and get ready for the advanced techniques in communication.
Outcomes of the course	5) Students get to know AM, FM, PM and the techniques made up from their derivatives. They learn some standards in communication (TV for example) and "how/why"s. 6) Improve the ability to solve fundamental problems in communication. 7) Start building a knowledge base for advanced communication techniques.
Textbook of the course	B. Sklar, Digital Communications, Fundamentals and Applications, Prentice Hall, 2000
Other reference books	1) J. G. Proakis, M. Salehi, Communication Systems Engineering, Prentice Hall, 2002. 2) B. P. Lathi, Modern Digital and Analog Communication Systems, Holt, Rinehart and Winston, Inc., 1989
Required material for the course	The course is mostly theoretical. However some simulation is presented to the students. Some communication equipment brought to the class is used to demonstrate basic communication techniques and signals. A communication lab equipped with communication lab-kits is required for the lab counterpart that is planned and placed in the curriculum.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Fundamentals of electronic communication, frequency spectrum
2	Fourier series, Fourier Transform, power and energy
3	Amplitude modulation, SSB-AM, DSB-AM, VSB, intro. to other modulation techniques.
4	Frequency and Phase Modulation
5	TV systems
6	Sampling, quantization, companding, expanding
7	Frequency, phase and amplitude shift modulation
8,9	Midterm
10	Random processes and noise, noise figure.
11	Noise power, SNR, noise filters
12	Matched filters, emphasizing, de-emphasizing
13	Shannon theorems, introduction to source coding
14	Spread spectrum
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**x**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.			**x**	
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.			**x**	

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s): Asist. Prof. Erol Seke

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226356 **COURSE TITLE:** COMMUNICATIONS

Semester	Weekly Hours		COURSE		
	Theoretical	Practical	Credits	ECTS	Type
6	3	0	3	6	Compulsory (x) Elective ( )

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	3 ( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	40	Quiz		
	Quiz	5	20	Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	151224299 SIGNALS AND SYSTEMS
Brief content of the course	Fundamentals of electronic communications, signal/noise power-energy, sampling and quantization, AM, VSB, SSB-SC AM, DSB-AM, FM, QAM, PM, PAM, TV principles, random processes, noise figure, matching filters, introduction to source coding, Shannon's theorems.
Objectives of the course	Learn the modulation techniques used in electronic communications, effects of noise, study on the methods for reducing the effects of noise,
Contribution of the course towards professional education	Students will get familiar with the techniques used in electronic communication and get ready for the advanced techniques in communication.
Outcomes of the course	8) Students get to know AM, FM, PM and the techniques made up from their derivatives. They learn some standards in communication (TV for example) and "how/why"s. 9) Improve the ability to solve fundamental problems in communication. 10) Start building a knowledge base for advanced communication techniques.
Textbook of the course	B. Sklar, Digital Communications, Fundamentals and Applications, Prentice Hall, 2000
Other reference books	3) J. G. Proakis, M. Salehi, Communication Systems Engineering, Prentice Hall, 2002. 4) B. P. Lathi, Modern Digital and Analog Communication Systems, Holt, Rinehart and Winston, Inc., 1989
Required material for the course	The course is mostly theoretical. However some simulation is presented to the students. Some communication equipment brought to the class is used to demonstrate basic communication techniques and signals. A communication lab equipped with communication lab-kits is required for the lab counterpart that is planned and placed in the curriculum.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Fundamentals of electronic communication, frequency spectrum
2	Fourier series, Fourier Transform, power and energy
3	Amplitude modulation, SSB-AM, DSB-AM, VSB, intro. to other modulation techniques.
4	Frequency and Phase Modulation
5	TV systems
6	Sampling, quantization, companding, expanding
7	Frequency, phase and amplitude shift modulation
8	Midterm
9	Midterm
10	Random processes and noise, noise figure.
11	Noise power, SNR, noise filters
12	Matched filters, emphasizing, de-emphasizing
13	Shannon theorems, introduction to source coding
14	Spread spectrum
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	3 high	2 med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.			**X**	
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.			**X**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**X**	
7	Communicating effectively in oral and written form both in Turkish and English.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**X**		
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.		**X**		

Name of Instructor(s): Erol Seke

Signature(s): Erol Seke

Date: 03.03.2011

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226367 **COURSE TITLE:** COMMUNICATIONS LAB

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
6	0	2	1	2	Compulsory (x) Elective ( )	Turkish ( ) English(x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	1 ( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm			Quiz		
	Quiz			Lab performance	8	50
	Homework			Report	8	50
	Project			Oral exam		
	Other (……)			Other (……)		
Final						
Makeup exam (Oral/Written)						

Prerequisites	151226356 COMMUNICATIONS (in parallel)
Brief content of the course	Hands-on Lab experiments on fundamentals of electronic communications, signal/noise power-energy, sampling and quantization, AM, DSB-AM, FM, PSK, QPSK, PAM, ADC/DAC principles.
Objectives of the course	Learn the modulation/demodulation techniques used in electronic communications, get familiar with the waveforms, learn how to measure and what to measure in the communication waveforms.
Contribution of the course towards professional education	Students will get familiar with the communication blocks and generated waveforms used in electronic communication and get ready for the advanced techniques in communication.
Outcomes of the course	11) Students get familiar with AM, FM, PSK and the techniques made up from their derivatives. They experimentally learn “how/why”s in practical communication systems 12) Gain the ability to measure fundamental quantities in communication. 13) Start building experience for advanced communication systems.
Textbook of the course	B. Sklar, Digital Communications, Fundamentals and Applications, Prentice Hall, 2000
Other reference books	5) J. G. Proakis, M. Salehi, Communication Systems Engineering, Prentice Hall, 2002. 6) B. P. Lathi, Modern Digital and Analog Communication Systems, Holt, Rinehart and Winston, Inc., 1989
Required material for the course	The course is parallel with Communication course in the curriculum which is mostly theoretical. A communication lab equipped with communication lab-kits is required for hands-on experiments.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Fundamentals of effective and safe handling of the lab-equipment and comm. kits.
2	Signal generators and spectrum experiments
3	Amplitude Modulation/demodulation, DSB-AM.
4	Amplitude Shift Keying
5	Frequency Modulation/demodulation
6	Frequency Shift Keying
7	Phase Shift Keying modulation/demodulation
8,9	Midterm
10	QPSK
11	ADC/DAC experiments
12	Digital data transmission experiments
13	Digital data transmission experiments / reception
14	Make-up for the incomplete experiments
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering			**x**	
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.			**x**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering	**x**			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.			**x**	
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s): Erol Seke

Signature(s): Erol Seke

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226364 **COURSE TITLE:** Control Systems Laboratory

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
6	0	2	1	2	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm			Quiz		
	Quiz			Lab performance	9	50
	Homework			Report	9	30
	Project			Oral exam		
	Other (……)			Other (……)	9	20
Final						
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Computer-aided control system analysis with MATLAB, mathematical modeling of the systems, open-loop and closed-loop control systems, transient and steady-state analysis, stability analysis, root-locus analysis, input and output transducers, characteristics of speed control systems.
Objectives of the course	Realization of modeling and analysis of control systems on MATLAB. Teaching basic circuit connections and their power calculations. To have the ability of examining the results obtained by various analysis methods.
Contribution of the course towards professional education	In this course, Students realize the knowledge about analysis methods that they have learned in the course, *Fundamentals of Control Systems*, on MATLAB. This makes them more powerful about the engineering problems that they faced with later.
Outcomes of the course	At the end of the course, students; 6) will learn to represent and analyze control systems on MATLAB. 7) will have knowledge about the characteristics of transient and steady-state responses of systems. 8) will learn how to decide weather the system is stable or not. 9) will have knowledge about transducers that are used in real applications.
Textbook of the course	Laboratory experiment manuals
Other reference books	Ogata K., Modern Control Engineering, Prentice Hall Inc., 4th Ed. 2001.
Required material for the course	MATLAB, DIGIAC 1750 instrumentation training set

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the course
2	Introduction to the Laboratory
3	Introduction to MATLAB
4	Mathematical Modeling of Systems
5	Open-Loop vs. Closed-Loop Systems
6	Transient Response Analysis
7	Transient and Steady-State Analysis
8	Midterm
9	Midterm
10	Stability Analysis
11	Input-Output Transducers (Hardware)
12	Root-Locus Analysis
13	Characteristics of Speed Control Systems (Hardware)
14	
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering	√			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		√		
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.			√	
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226366 **COURSE TITLE:** Electronics II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
6	3	0	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
	3	(x)		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	2	20	Lab performance		
	Homework	4	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)						

Prerequisites	Electronics I
Brief content of the course	Frequency response of amplifiers, amplifiers with feedback, oscillators, filters, power amplifiers, logic families
Objectives of the course	To emphasize the limitations of amplifiers To introduce oscillator and filter concepts Introduction of logic families and their limitations
Contribution of the course towards professional education	The importance of signal amplification in signal processing and the limitations of the amplifiers as well as the inner structure of logic families are expressed in this course.
Outcomes of the course	Students who successfully complete this course will have a working knowledge on the frequency operating range for amplifiers, oscillator principles, filter design, and efficiency calculation..
Textbook of the course	A.S. Sedra and K.C. Smith, Microelectronic Circuits, 7th Ed. OUP, 2016. (Older editions are also welcome)
Other reference books	R. Jaeger and T. Blalock, Microelectronic Circuit Design, 3rd Ed. McGraw-Hill, 2006. D. Neamen, Microelectrnics Circuit Analysis and Design, 4th Ed. McGraw-Hill, 2010.
Required material for the course	An electronic calculator would be useful for hand calculations.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Frequency response of amplifiers
2	Low and high frequency response of an FET amplifier
3	BJT high-frequency model
4	Miller theorem and its application to amplifiers
5	Amplifiers with feedback
6	Oscillators
7	Butterworth and Chebyshev filters
8	Midterm
9	Midterm
10	Passive and active first and second order filters
11	Power amplifiers
12	BJT logic families
13	NMOS and CMOS logic gates
14	Course Review
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**X**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**X**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.			**X**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s):

Asst. Prof. Dr. Faruk Dirisağlık

Signature(s):

Date: March 2, 2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226373 **COURSE TITLE:** Fundamentals of Control Systems

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
6	3	0	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	3 ( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz	4	20	Lab performance		
	Homework	5	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	Circuit Analysis II
Brief content of the course	Introduction. Open-loop, closed-loop. Block diagrams. Modeling dynamic systems. Electromechanical systems. Properties of feedback systems. Time response. Steady-state error. Stability. Root locus analysis. Nyquist diagrams. Frequency response. Phase and gain margins.
Objectives of the course	Teaching fundamental concepts of control systems, calculating time response of feedback control systems. Performing stability analysis of control systems.
Contribution of the course towards professional education	In this course, modeling, stability and response of dynamic systems for different inputs are examined. Since these concepts are properties of not only the electrical but also mechanical,chemical or other systems, this course prepares students for the problems that they will face in the industry.
Outcomes of the course	Students who successfully complete this course 1) be aware of contribution of feedback 2) Learn the relation between poles of the system and repsonse 3) Decide the stability of systems
Textbook of the course	Ogata, K., Modern Control Engineering, Prentice Hall, Inc., 4th Ed. 2001.
Other reference books	Dorf, A., Modern Control Systems, Addison Wesley, 9th Ed., 2001. Nise, B., Control Systems Engineering, John Wiley, 3rd Ed., 2000.
Required material for the course	MATLAB program

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction, components of control system. Open-loop vs closed-loop
2	Block diagrams, modeling dynamic systems, differential equations and transfer functions.
3	Modeling mechanical and electromechanical systems
4	Properties of feedback systems. Sensitivity analysis, disturbance.
5	Time response. Transient and steady-state response of first-order and second-order systems
6	Relation between pole locations and settling time, overshoot, rise
7	Steady state-error and system type. P, PI, and PID controllers.
8	Midterm
9	Midterm
10	Stability. Routh-Hurwitz Criterion
11	Root locus analysis.
12	Root locus analysis
13	Nyquist diagrams. Stability using Nyquist criterion.
14	Frequency response. Phase and gain margins.
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	√			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		√		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s):

Assoc. Prof. Dr. Osman Parlaktuna

Signature(s):

Date:

COURSE INFORMATION FORM

SEMESTER	Spring

COURSE CODE	151226363	COURSE NAME	FUNDAMENTALS OF CONTROL SYS.

SEMESTER	WEEKLY COURSE PERIOD			COURSE			
	THEORY	PRACTISE	LABORATORY	Credit	ECTS	TYPE	LANG.
Spring	3	0	0	3	6	Required	EN

COURSE CATEGORY (Credit Distribution)				
Basic Science	Basic Engineering	Includes Design	Electrical-Electronics Engineering	Social Science
			3	

ASSESMENT CRITERIA			
EXAM NAME		EVALUATION TYPE	%
IN TERM EXAMS	1st Mid Term	WRITTEN	25
	2nd Mid Term	WRITTEN	25
	Other Exam 1	APPLICATION	10
	Other Exam 2		
	Other Exam 3		
	Other Exam 4		
	Other Exam 5		
	Other Exam 6		
	Other Exam 7		
	Other Exam 8		
FINAL EXAM		WRITTEN	40
EXCUSE EXAM			

PREREQUISITE(S)	151224232 CIRCUIT ANALYSIS II , 151244232 CIRCUIT ANALYSIS II
COURSE DESCRIPTION	Introduction. Open-loop, closed-loop. Block diagrams. Modeling dynamic systems. Electromechanical systems. Properties of feedback systems. Time response. Steady-state error. Stability. Root locus analysis. Nyquist diagrams. Frequency response. Phase and gain margins.
COURSE OBJECTIVES	Teaching fundamental concepts of control systems, calculating time response of feedback control systems. Performing stability analysis of control systems.
CONTRIBUTION TOWARDS PROFESSIONAL EDUCATION	In this course, modeling, stability and response of dynamic systems for different inputs are examined. Since these concepts are properties of not only the electrical but also mechanical,chemical or other systems, this course prepares students for the problems that they will face in the industry.
COURSE OUTCOMES	Students who successfully complete this course ,1)be aware of contribution of feedback ,2)Learn the relation between poles of the system and repsonse, 3)Decide the stability of systems
TEXTBOOK	Ogata, K., Modern Control Engineering, Prentice Hall, Inc., 4th Ed. 2001.
OTHER REFERENCES	Dorf, A., Modern Control Systems, Addison Wesley, 9th Ed., 2001. Nise, B., Control Systems Engineering, John Wiley, 3rd Ed., 2000.
TOOLS AND EQUIPMENTS REQUIRED	MATLAB program

COURSE SYLLABUS	
WEEK	**TOPICS**
1	Introduction, components of control system. Open-loop vs closed-loop
2	Block diagrams, modeling dynamic systems, differential equations and transfer functions.
3	Modeling mechanical and electromechanical systems
4	Properties of feedback systems. Sensitivity analysis, disturbance.
5	Time response. Transient and steady-state response of first-order and second-order systems
6	MID TERM EXAMINATION 1
7	Relation between pole locations and settling time, overshoot, rise
8	Steady state-error and system type. P, PI, and PID controllers.
9	Stability. Routh-Hurwitz Criterion.
10	Root locus analysis.
11	MID TERM EXAMINATION 1
12	Root locus analysis
13	Nyquist diagrams. Stability using Nyquist criterion.
14	Frequency response. Phase and gain margins.
15,16	FINAL EXAM

NO	PROGRAM OUTCOMES	SUPPORT LEVEL
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	4 High
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	4 High
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	3 Medium
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	3 Medium
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	3 Medium
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	2 Less
7	Communicating effectively in oral and written form both in Turkish and English.	1 None
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	1 None
9	Understanding of professional and ethical responsibility	1 None
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1 None
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1 None

PREPARED BY	SIGNATURE	DATE
Prof.Dr.ABDURRAHMAN KARAMANCIOĞLU		12/12/2012

Go Back

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226375 **COURSE TITLE:** Principles of Energy Conversion

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
6	3	0	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]		General Education	Humanities
2	2	( )	-	-

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	40	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)	1	60	Other (……)		
Final	Comprehensive					
Makeup exam (Oral/Written)	Oral					

Prerequisites	Electromagnetics II
Brief content of the course	Electromechanical energy conversion, Transformers, Pu systems, Solutions to three phase symmetrical circuits, Power in three phase system.
Objectives of the course	Some fundamental knowledge that is used in Electric Machinery, Electric Power System Analysis I, II classes is given to the students.
Contribution of the course towards professional education	Some fundamental knowledge about electric power system engineering is given to the students in this class
Outcomes of the course	Student, who takes this course, can learn the subjects about the electric machines and electric power systems that are related with student main interest (for instance electronic, Control) easily.
Textbook of the course	Energy Conversion, Electric Motors and Generators, Raymond Ramshaw, R. G. Heeswijk, Sounders College Publishing , 1990
Other reference books	Electric Machinery, E. Fitzgeralt, Charles Kingsley Jr., Stephen D. Umans,
Required material for the course	-

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to electromechanical energy conversion, Faraday's law and emf, Solutions to some related examples.
2	Lorenz's force, Fundamental generator operation, Fundamental motor operation, Solutions to some related examples.
3	Continuous electromechanical energy conversion, Electromechanical energy conversion and dynamic circuits, Solutions to some related examples.
4	Singly-excited rotational systems, Multiply-excited rotating systems, Solutions to some related examples.
5	Translational systems, Solutions to some related examples.
6	Moment and stored magnetic energy, coenergy, Solutions to some related examples.
7	Electrostatic devices, Dynamic circuit analysis, Solutions to some related examples
8	Midterm
9	Midterm
10	Transformers and Equivalent circuit of a two-winding single phase transformer, Solutions to some related examples
11	Pu systems, Solutions to some related examples
12	Solutions to symmetric three-phase circuits including transformers, Solutions to some related examples
13	Power definitions in three-phase power systems, Solutions to some related examples
14	Power-flow analysis, Solutions to some related examples
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**X**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**X**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering		**X**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Salih FADIL

Signature(s): Prof. Dr. Salih FADIL

Date: March 22, 2011

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226361 COURSE TITLE: Principles of Energy Conversion

Semester	Weekly Hours		COURSE		
	Theoretical	Practical	Credits	ECTS	Type
6	4	0	4	6	Compulsory (x) Elective ( )

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
1	2 ( )	-	-

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	40	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final	Comprehensive	1	60			
Makeup exam (Oral/Written)	Oral					

Prerequisites	Electromagnetics II
Brief content of the course	Electromechanical energy conversion, Transformers, Pu systems, Solutions to three phase symmetrical circuits, Power in three phase system.
Objectives of the course	Some fundamental knowledge that is used in Electric Machinery, Electric Power System Analysis I, II classes is given to the students.
Contribution of the course towards professional education	Some fundamental knowledge about electric power system engineering is given to the students in this class
Outcomes of the course	Student, who takes this course, can learn the subjects about the electric machines and electric power systems that are related with student main interest (for instance electronic, Control) easily.
Textbook of the course	Energy Conversion, Electric Motors and Generators, Raymond Ramshaw, R. G. Heeswijk, Sounders College Publishing , 1990
Other reference books	Electric Machinery, E. Fitzgeralt, Charles Kingsley Jr., Stephen D. Umans,
Required material for the course	-

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to electromechanical energy conversion, Faraday's law and emf, Solutions to some related examples.
2	Lorenz's force, Fundamental generator operation, Fundamental motor operation, Solutions to some related examples.
3	Continuous electromechanical energy conversion, Electromechanical energy conversion and dynamic circuits, Solutions to some related examples.
4	Singly-excited rotational systems, Multiply-excited rotating systems, Solutions to some related examples.
5	Translational systems, Solutions to some related examples.
6	Moment and stored magnetic energy, coenergy, Solutions to some related examples.
7	Electrostatic devices, Dynamic circuit analysis, Solutions to some related examples
8	Midterm
9	Midterm
10	Transformers and Equivalent circuit of a two-winding single phase transformer, Solutions to some related examples
11	Pu systems, Solutions to some related examples
12	Solutions to symmetric three-phase circuits including transformers, Solutions to some related examples
13	Power definitions in three-phase power systems, Solutions to some related examples
14	Power-flow analysis, Solutions to some related examples
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	3 High	2 Med	1 Low	0 None
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**X**		
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.			**X**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems		**X**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**X**	
7	Communicating effectively in oral and written form both in Turkish and English.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility			**X**	
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Name of Instructor(s): Salih FADIL

Signature(s): Prof. Dr. Salih FADIL

Date:

COURSE INFORMATION FORM

SEMESTER	Spring

COURSE CODE	151226361	COURSE NAME	PRINCIPLES OF ENERGY CONVERSION

SEMESTER	WEEKLY COURSE PERIOD			COURSE			
	THEORY	PRACTISE	LABORATORY	Credit	ECTS	TYPE	LANG.
Spring	4	0	0	4	6	Required	EN

COURSE CATEGORY (Credit Distribution)				
Basic Science	Basic Engineering	Includes Design	Electrical-Electronics Engineering	Social Science
			4	

ASSESMENT CRITERIA			
EXAM NAME		EVALUATION TYPE	%
IN TERM EXAMS	1st Mid Term	WRITTEN	30
	2nd Mid Term	WRITTEN	30
	Other Exam 1		
	Other Exam 2		
	Other Exam 3		
	Other Exam 4		
	Other Exam 5		
	Other Exam 6		
	Other Exam 7		
	Other Exam 8		
FINAL EXAM		WRITTEN	40
EXCUSE EXAM			

PREREQUISITE(S)	
COURSE DESCRIPTION	Electromechanical energy conversion, Transformers, Pu systems, Solutions to three phase symmetrical circuits, Power in three phase system.
COURSE OBJECTIVES	Some fundamental knowledge that is used in Electric Machinery, Electric Power System Analysis I, II classes is given to the students.
CONTRIBUTION TOWARDS PROFESSIONAL EDUCATION	Some fundamental knowledge about electric power system engineering is given to the students in this class
COURSE OUTCOMES	Student, who takes this course, can learn the subjects about the electric machines and electric power systems that are related with student main interest (for instance electronic, Control) easily.
TEXTBOOK	Energy Conversion, Electric Motors and Generators, Raymond Ramshaw, R. G. Heeswijk, Sounders College Publishing , 1990
OTHER REFERENCES	Electric Machinery, E. Fitzgeralt, Charles Kingsley Jr., Stephen D. Umans,
TOOLS AND EQUIPMENTS REQUIRED	

COURSE SYLLABUS	
WEEK	**TOPICS**
1	Introduction to electromechanical energy conversion, Faraday s law and emf, Solutions to some related examples
2	Lorenz s force, Fundamental generator operation, Fundamental motor operation, Solutions to some related examples.
3	Continuous electromechanical energy conversion, Electromechanical energy conversion and dynamic circuits, Solutions to some related examples.
4	Singly-excited rotational systems, Multiply-excited rotating systems, Solutions to some related examples.
5	Translational systems, Solutions to some related examples.
6	MID TERM EXAMINATION 1
7	Moment and stored magnetic energy, coenergy, Solutions to some related examples.
8	Electrostatic devices, Dynamic circuit analysis, Solutions to some related examples
9	Transformers and Equivalent circuit of a two-winding single phase transformer, Solutions to some related examples
10	Pu systems, Solutions to some related examples
11	MID TERM EXAMINATION 1
12	Solutions to symmetric three-phase circuits including transformers, Solutions to some related examples
13	Power definitions in three-phase power systems, Solutions to some related examples
14	Power-flow analysis, Solutions to some related examples
15,16	FINAL EXAM

NO	PROGRAM OUTCOMES	SUPPORT LEVEL
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	4 High
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	3 Medium
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	3 Medium
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	2 Less
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	3 Medium
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	2 Less
7	Communicating effectively in oral and written form both in Turkish and English.	1 None
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	1 None
9	Understanding of professional and ethical responsibility	2 Less
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	1 None
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	1 None

PREPARED BY	SIGNATURE	DATE
Prof.Dr.SALİH FADIL		12/12/2012

Go Back

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226377 **COURSE TITLE:** Fundamentals of Occupational Health and Safety

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
6	2	0	2	3	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	( )		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm	1	40	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	60			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Definition of occupational safety , occupational accidents, occupational diseases, occupational safety in workplaces, Risk assessment, Guards, Fire, the relevant legislation
Objectives of the course	Teach the methods of prevention of occupational accidents and diseases in the workplace.
Contribution of the course towards professional education	Knowing the possible precautions against accidents and occupational diseases in the workplace to protect human health and improve the efficiency of labor
Outcomes of the course	1. To improve the physical conditions of the workplace, develop alternative solutions and solving. 2. Design of the Workplace conditions (noise, heat, dust, etc.), taking measurements, analyzing the results and interpretation. 3. Potential risks in the workplace, assessment and development of solutions to protect human health
Textbook of the course	Benjamin O. Alli "Fundamental principles of Occupational Health and Safety", ILO, 2008
Other reference books	1. Kahya, E., 2014, **İş Güvenliği**, ESOGÜ Yayın No :246, Eskişehir. 2. Yiğit, A., **İş Güvenliği**, 2013, Dora basım-Yayın Dağıtım Ltd. Şti, Bursa
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Course scope, execution, evaluation Occupational Safety (defines, importance, etc.)
2	Occupational Safety Culture
3	Work Accidents
4	Work Accidents
5	Occupational diseases
6	Factors Affecting Business Environment
7	Basic security rules in workplaces.
8	Midterm Exam
9	Midterm Exam
10	Basic security rules in workplaces.
11	Risk Assessment
12	Protectors
13	Fire
14	Occupational Safety Law
15,16	Term Exam week

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**x**		**X**
9	Understanding of professional and ethical responsibility	**x**			
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.		**x**		
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	**x**			

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Osman PARLAKTUNA

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226376 **COURSE TITLE**: INTRODUCTION TO PROJECT MANAGEMENT

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
7	2	0	3	5	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	( )		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm	1	30	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project	1	30	Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	Basic Computer Knowledge.
Brief content of the course	Definition of Project and Project management. Preparing of project handbook. Gantt chart, Project management with CPM and PERT. Resource analysis. Crashing analysis. Project planning with MS Project 2007. Earned value analysis. Risk analysis and risk analysis.
Objectives of the course	To teach Project management concepts and techniques. To teach Project planning and tracking with MS Project software. To give information about risk management.
Contribution of the course towards professional education	To learn scheduling and tracking of activities when project based production occurs in production, service and information systems
Outcomes of the course	1. Ability of scheduling and tracking of activities in Project based production. 2. Ability of designing and tracking of a Project with MS Project software. 3. Ability of design and present of a project by group working on a real problem.
Textbook of the course	K. Lockyer, J. Gordon, 1991, Critical Path Analysis 5.ed., Pitman Publishing, 244 p. C. Chatfield, T. Johnson, 2009, Adım Adım Microsoft Project 2007, Ankara, Arkadaş Yayınevi
Other reference books	C. F. Gray, E. W. Larson, 2000, Project Management, Mc Graw Hill, 496 p.
Required material for the course	Ms Project software, data projection and computer.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Basic concepts in project management and phases of project management
2	Preparing the project handbook, organization types of project team.
3	Project planning with Gantt chart, network types of a project
4	CPM (Critical path method), different relationship between successive activities
5	PERT (Probabilistic evaluation and review technique)
6	Basic MS Project education
7	Advanced MS Project education
8	Midterm
9	Midterm
10	Project crashing analysis
11	Resource analysis
12	Earned value analysis
13	Risk management and analysis
14	Presentation of student projects
15,16	Term Exam week

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.			**X**	
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.		**X**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems			**X**	
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**X**	
7	Communicating effectively in oral and written form both in Turkish and English.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing			**X**	
9	Understanding of professional and ethical responsibility			**X**	
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	**X**			
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.			**X**	

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Asso. Prof. Dr. Aydın Sipahioğlu

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227629 **COURSE TITLE:** Project Management

Semester	Weekly Hours		COURSE		
	Theoretical	Practical	Credits	ECTS	Type
7	2	0	2	5	Compulsory (x) Elective ( )

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project	1	30	Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	Basic Computer Knowledge.
Brief content of the course	Definition of Project and Project management. Preparing of project handbook. Gantt chart, Project management with CPM and PERT. Resource analysis. Crashing analysis. Project planning with MS Project 2007. Earned value analysis. Risk analysis and risk analysis.
Objectives of the course	To teach Project management concepts and techniques. To teach Project planning and tracking with MS Project software. To give information about risk management.
Contribution of the course towards professional education	To learn scheduling and tracking of activities when project based production occurs in production, service and information systems
Outcomes of the course	1. Ability of scheduling and tracking of activities in Project based production. 2. Ability of designing and tracking of a Project with MS Project software. 3. Ability of design and present of a project by group working on a real problem.
Textbook of the course	K. Lockyer, J. Gordon, 1991, Critical Path Analysis 5.ed., Pitman Publishing, 244 p. C. Chatfield, T. Johnson, 2009, Adım Adım Microsoft Project 2007, Ankara, Arkadaş Yayınevi
Other reference books	C. F. Gray, E. W. Larson, 2000, Project Management, Mc Graw Hill, 496 p.
Required material for the course	Ms Project software, data projection and computer.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Basic concepts in project management and phases of project management
2	Preparing the project handbook, organization types of project team.
3	Project planning with Gantt chart, network types of a project
4	CPM (Critical path method), different relationship between successive activities
5	PERT (Probabilistic evaluation and review technique)
6	Basic MS Project education
7	Advanced MS Project education
8	Midterm
9	Midterm
10	Project crashing analysis
11	Resource analysis
12	Earned value analysis
13	Risk management and analysis
14	Presentation of student projects
15,16	Term Exam week

NO	OUTCOMES OF THE PROGRAMME	3	2	1	0
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.			**X**	
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.		**X**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems			**X**	
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**X**	
7	Communicating effectively in oral and written form both in Turkish and English.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing			**X**	
9	Understanding of professional and ethical responsibility			**X**	
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.	**X**			
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.			**X**	

Scale for assessing the contribution of the course to the program outcomes:

3: Very high **2: Medium** **1: Low** **0: None**

Name of Instructor(s): Asso. Prof. Dr. Aydın Sipahioğlu

Signature(s):

Date: 13.06.2013

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227437 **COURSE TITLE:** ECONOMICS

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	0	3	4	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	0 ( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	40	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	60			
Makeup exam (Oral/Written)						

Prerequisites	-
Brief content of the course	Fundamentals of economics.
Objectives of the course	The purpose of this course is to help students learn the fundamental lessons of economics and to show how such lessons can be applied to the real world in which they live.
Contribution of the course towards professional education	By the end of the course students will be able to: 1. Learn basic economic concepts. 2. Understand scarcity. 3. Understand the role of trade among nations 4. Think analitically 5. Define benefits and costs of their actions 6. Understand the role of government in the economy 7. Design and evaluate economic policies 8. Learn market types and their working principles 9. Know consumer and producer behavior under different circumstences 10. Understand why standart of living is different among nations 11. Understand basic macroeconomic topics
Outcomes of the course	
Textbook of the course	**Mankiw, N. Gregory (2001).** *Principles of Economics*, Second Ed. Harcourt College Publishers, New York.
Other reference books	**Tucker, Irvin B. (1997).** *Economics*, West Publishing Company, New York. **Stroup, R. L. And Gwartney J. D. And Others (2003).** *Economics*, Tenth Ed. Thomson. New York.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Ten principles of economics, thinking like an economist
2	Interdependence and the gains from trade
3	The market forces of supply and demand
4	Elasticity and its application
5	Supply, demand and government policies
6	Consumers, producers, and the efficiency of markets
7	The costs of taxation
8	Midterm
9	Midterm
10	Firms in competitive markets
11	Monopoly, oligopoly and monopolistic competition
12	The markets for the factors of production
13	Measuring a nation's income and measuring the cost of living,
14	The monetary system; unemployment and inflation; and open-economy macroeconomics.
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**x**		
9	Understanding of professional and ethical responsibility			**x**	
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.			**x**	
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.			**x**	

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227644 **COURSE TITLE:** Design Processes

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	1	2	2	4	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	2 (√)		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm			Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project	1	50	Oral exam		
	Other (Reports)	3	50	Other (……)		
Final						
Makeup exam (Oral/Written)	Oral					

Prerequisites	
Brief content of the course	Design and implementation of a device or system which is subject to real constraints and conditions.
Objectives of the course	Teaching the steps of engineering design process.
Contribution of the course towards professional education	In this course students will learn the steps of engineering design process and apply the steps on a real-constrained project
Outcomes of the course	At the end of this course, Students 14) Will be able to apply design process steps on a project 15) Can design a real-constrained project 16) Can implement the project
Textbook of the course	George E. Dieter Linda C. E. Schmidt "Engineering Design" McGraw Hill, 4th Ed. 2009
Other reference books	Gerard Voland "Engineering by Design" Pearson, Prentice Hall, 2nd Ed. 2004.
Required material for the course	Components that will be used in the design

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Engineering Design, Problem definition
2	Need identification, Gathering information
3	Concept genetarion,
4	Decision making and concept selection
5	Detail design
6	Modeling and simulation
7	Risk, reliability, and Safety
8	Midterm
9	Midterm
10	Cost Evaluation
11	Design with Materials
12	Design for manufacturing
13	Quality and Robust design
14	Legal and Ethical Issues
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	**x**			
7	Communicating effectively in oral and written form both in Turkish and English.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility			**x**	
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.		**x**		
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Osman Parlaktuna

Signature(s):

Date: 23.07.205

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227643 **COURSE TITLE:** Occupational Health and Safety in Electrical Engineering

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
7	2	0	2	3	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	( )		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm	1	40	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	60			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Occupational safety in electrical workplaces, definition of electrical quantities, cause of electrical accidents, electrical safety risk analysis and precautions for workplaces, effect of electrical current on human body, electric shock emergency, occupational safety laws in electrical work.
Objectives of the course	Teach the risk analysis, safety rules and precautions for occupational safety in electrical workplaces and occupational safety laws for electrical operations and facilities.
Contribution of the course towards professional education	Knowing the possible electrical risks in different workplaces and taking precautions against the accidents protect human and improve the efficiency of labor
Outcomes of the course	1. To know possible electrical risks in different works places and take precautions for occupational health and safety. 2. Design of an experiment to take measurements (fault current, static electric, ground resistance, electromagnetic field level), analyzing the results and interpretation. 3. To know the occupational health and safety laws for electrical work.
Textbook of the course	Benjamin O. Alli "Fundamental principles of Occupational Health and Safety", ILO, 2008
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Occupational safety in electrical works
2	Definition of electrical quantities (voltage, current, resistance, static electric, etc.)
3	Electrical accidents
4	Electrical facility and installation
5	Fundamentals of electrical safety(isolation, low voltage usage)
6	Fundamentals of electrical safety(grounding, avoidance of static electric)
7	Electrical safety in low and high voltage operations
8	Midterm Exam
9	Midterm Exam
10	Electrical safety in facilities (electric generation and distribution facilities)
11	Electrical safety in facilities (construction sites and workplace with flammable or explosive atmosphere)
12	Effect of electrical current on human body
13	Electric shock emergency
14	Occupational health and safety laws for electrical works
15,16	Term Exam week

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**X**		
9	Understanding of professional and ethical responsibility	**X**			**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.		**X**		
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	**X**			**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Osman PARLAKTUNA

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228539 **COURSE TITLE:** Electrical Engineering Design

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
8	2	4	4	9	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	4 (√)		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm			Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project	1	50	Oral exam		
	Other (Reports)	3	50	Other (……)		
Final						
Makeup exam (Oral/Written)	Oral					

Prerequisites	
Brief content of the course	Design and implementation of a device or system which is subject to real constraints and conditions.
Objectives of the course	Teaching the steps of engineering design process.
Contribution of the course towards professional education	In this course students will learn the steps of engineering design process and apply the steps on a real-constrained project
Outcomes of the course	At the end of this course, Students 17) Will be able to apply design process steps on a project 18) Can design a real-constrained project 19) Can implement the project
Textbook of the course	George E. Dieter Linda C. E. Schmidt “Engineering Design” McGraw Hill, 4th Ed. 2009
Other reference books	
Required material for the course	Components that will be used in the design

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Engineering Design, Problem definition
2	Need identification, Gathering information
3	Concept genetarion,
4	Decision making and concept selection
5	Detail design
6	Modeling and simulation
7	Risk, reliability, and Safety
8	Midterm
9	Midterm
10	Cost Evaluation
11	Design with Materials
12	Design for manufacturing
13	Quality and Robust design
14	Legal and Ethical Issues
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	**x**			
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	**x**			
7	Communicating effectively in oral and written form both in Turkish and English.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility			**x**	
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.		**x**		
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Osman Parlaktuna

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228548 COURSE TITLE: THE ENGINEER AND SOCIETY

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
8	2	0	2	2	Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		2

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	45	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	55			
Makeup exam (Oral/Written)						

Prerequisites	None
Brief content of the course	Ethical issues in the practice of engineering, safety and liability, professional responsibility to clients and employers, whistle-blowing, codes of ethics, career choice, legal obligations; Labor Law, case studies, environmental issues, global energy issue.
Objectives of the course	1) To develop moral reasoning skills 2) To learn to read and think critically 3) To explore the fundamental structure of human personhood, the philosophical grounding of moral action, and the development of moral character as the precondition of all integral performance in a profession, 4) To raise awareness on labor law. 5) To raise environmental awareness.
Contribution of the course towards professional education	1) Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions. 2) Understanding of professional and ethical responsibility
Outcomes of the course	This course discusses the social responsibility of the engineer and raises the awareness of the current global issues.
Textbook of the course	C.B. Fleddermann, Engineering Ethics, 3rd Ed., New Jersey: Pearson Prentice Hall, 2008 Text of Labor Law Occupational Health and Work Safety Law
Other reference books	Unger, S. Controlling Technology: Ethics and the Responsible Engineer, 2nd Ed., Wiley, 1994 OSHA documentation
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	History of Ethics, Engineering and ethics
2	Professionalism and code of ethics
3	Ethics theories,
4	Ethical problem solving techniques
5	Case studies
6	Ethical issues in engineering practice,
7	Whistle blowing
8	Midterm
9	Midterm
10	Risk, safety and accidents
11	Case studies
12	Labor Law
13	Work Safety
14	Environmental issues
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	**x**			
9	Understanding of professional and ethical responsibility	**x**			
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	**x**			

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s): Hasan H Erkaya

Signature(s):

Date: Mar 11, 2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228538 COURSE TITLE: THE ENGINEER AND SOCIETY

Semester	Weekly Hours		COURSE		
	Theoretical	Practical	Credits	ECTS	Type
8	3	0	3	4	Compulsory (x) Elective ( )

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		2

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	45	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	55			
Makeup exam (Oral/Written)						

Prerequisites	None
Brief content of the course	Ethical issues in the practice of engineering, safety and liability, professional responsibility to clients and employers, whistle-blowing, codes of ethics, career choice, legal obligations; Labor Law, case studies, environmental issues, global energy issue.
Objectives of the course	1) To develop moral reasoning skills 2) To learn to read and think critically 3) To explore the fundamental structure of human personhood, the philosophical grounding of moral action, and the development of moral character as the precondition of all integral performance in a profession, 4) To raise awareness on labor law. 5) To raise environmental awareness.
Contribution of the course towards professional education	1) Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions. 2) Understanding of professional and ethical responsibility
Outcomes of the course	This course discusses the social responsibility of the engineer and raises the awareness of the current global issues.
Textbook of the course	C.B. Fleddermann, Engineering Ethics, 3rd Ed., New Jersey: Pearson Prentice Hall, 2008 Text of Labor Law Occupational Health and Work Safety Law
Other reference books	Unger, S. Controlling Technology: Ethics and the Responsible Engineer, 2nd Ed., Wiley, 1994 OSHA documentation
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	History of Ethics, Engineering and ethics
2	Professionalism and code of ethics
3	Ethics theories,
4	Ethical problem solving techniques
5	Case studies
6	Ethical issues in engineering practice,
7	Whistle blowing
8	Midterm
9	Midterm
10	Risk, safety and accidents
11	Case studies
12	Labor Law
13	Work Safety
14	Environmental issues
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	3 high	2 med.	1 None
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering			**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.			**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.			**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.			**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems			**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**x**
7	Communicating effectively in oral and written form both in Turkish and English.			**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**x**	
9	Understanding of professional and ethical responsibility	**X**		
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.		**x**	
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.	**X**		

Name of Instructor(s): Hasan H Erkaya

Signature(s):

Date:

ESOGU ELECTRICAL - ELECTRONICS ENGINEERING DEPARTMENT

NON-TECHNICAL ELECTIVES

ESOGÜ Electrical-Electronics Engineering Department COURSE

CODE: 151226355 **COURSE TITLE:** Advanced Grammar

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
6	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	None
Brief content of the course	Subject-verb agreement (confusing singulars and plurals, compound subject, blind agreement); Pronoun reference (ambiguous reference, reference to modifiers, implied antecedents, agreement of pronouns); Pronoun case (subject-object pronouns, who, whom, whoever, whomever, etc., adjectives, adverbs, adjectives + adverbs, so. . . such. . . ., comparative, superlative); Misplaced/dangling modifiers; Confused sentences, incomplete constructions; Consistency; Coordination and subordination; Effective sentences, sentence variety, and awkward sentences, awkward clauses, awkward modifiers; Auxiliary verbs and perfect tenses; Infinitive and gerund; Participle and subjunctive.
Objectives of the course	Teach advanced grammar to prepare students to take any advanced grammar tests.
Contribution of the course towards professional education	It will improve English comprehension skills of students
Outcomes of the course	Students who successfully complete this course are expected to score well on standard English Exams such as TOEFL, KPDS and ÜDS.
Textbook of the course	-
Other reference books	Eastwood, J. (2005). Oxford *Learner's Grammar*. New York: OUP. Guth, H.P. (1985). *New English Handbook*, 2nd edition. California: Wadsworth Publishing Company. Thewlis, S.H. (2000). *Grammar Dimensions*, Platinum Edition 3. Boston, MA: Heinle & Heinle.
Required material for the course	A monolingual dictionary

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the course; pre-test
2	Sub.-verb agreement; vocabulary learning strategies
3	Pronoun Reference; root, affix, prefix, suffix
4	Pronoun case; popular prefixes
5	Misplaced/dangling modifiers; popular suffixes
6	Confused sentences; incomplete constructions
7	Vocabulary learning strategies; Consistency; sentence style
8	Midterm
9	Midterm
10	Coordination and subordination
11	Vocabulary learning strategies; effective sentences
12	Awkward sentences
13	Auxiliary verbs and perfect tense
14	Vocabulary learning strategies; Infinitive and gerund; Participle and subjunctive
15-16	Final exam

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.	**X**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	**X**			
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.		**X**		

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Assistant Prof. Dr. Odilea Rocha Erkaya

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223237 **COURSE TITLE:** Beginning French I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
3	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) French (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	none
Brief content of the course	Se présenter et parler de soi. Parler de sa famille.Proposer de faire quelque chose.
Objectives of the course	Saluer (registre formel et informel) Demander une informationes sur une personne.
Contribution of the course towards professional education	Communication skills in a foreign language (French) Understanding a foreign culture (French)
Outcomes of the course	1. Introduction of self in French and providing info about self. 2. Asking for personal information and comprehending it. 3. Description of the physical appearance of a person. 4. Uses expression of time.
Textbook of the course	Francofolie I
Other reference books	Grammaire progressive du français.
Required material for the course	none

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Se présenter et parler de soi.
2	Présenter quelqu'un.
3	Saluer registre formel et informel.
4	Demander quelque chose (registre formel et informel)
5	Informations sur une personne.
6	Parler de son caractères et de ses gouts.
7	Parler de sa famille.
8	Midterm
9	Midterm
10	Raconter des moments de la vie quotidienne.
11	Demander, donner l'heure.
12	Proposer de faire quelque chose.
13	Donner des ordres.
14	Quelques verbes irreguliers.
15-16	Final Exam

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**X**		
7	Communicating effectively in oral and written form both in Turkish and English.		**X**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Mehmet Çetin

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151224242 **COURSE TITLE:** Beginning French II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
4	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) French (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	Beginning French I
Brief content of the course	Acheter quelque chose.Parler du temps qu'il fait.Raconter quelque chose au passAcheter quelque chose.Parler du temps qu'il fait.Raconter quelque chose au passé.
Objectives of the course	Demander et donner des indications.Commander un repas.Décrire un appartement.
Contribution of the course towards professional education	Communication skills in a foreign language (French) Understanding a foreign culture (French)
Outcomes of the course	1.Ordering food at a restaurant 2. Describing a house or building. 3. Telling about an event from past 4. Writing a message or letter to a friend. 5. Handling communication for shopping and traveling
Textbook of the course	Francofolie I
Other reference books	Grammaire progressive du français.
Required material for the course	none

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Acheter quelque chose:Demander le prix et payer.
2	S'orienter:Demander et donner des indications.
3	Commander un repas.
4	Décrire un appartement.
5	Proposer et accepter un rendez-vous.
6	Faire des suppositions.
7	Etablir des comparaisons.
8	Midterm
9	Midterm
10	Parler du temps qu'il fait.
11	Raconter quelque chose au passé.
12	Parler de ce qui va passer.
13	Organiser un voyage et réserver ses places.
14	Ecrire un message amical.(lettre,courriel)
15-16	Final Exam

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**X**		
7	Communicating effectively in oral and written form both in Turkish and English.		**X**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Mehmet Çetin

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226369 **COURSE TITLE:** Career Development and Vocational Counseling

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
6	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	( )		x

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
	Type	**Number**	**%**	**Activity Type**	**Number**	**%**
Midterm	Midterm	1	30	Quiz		
	Quiz			Lab performance		
	Homework	1	30	Report		
	Project			Oral exam		
	Other (Presentation)	1	10	Other (……)		
Final		1	30			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Support, enhance and expand the provision of careers education in university.
Objectives of the course	Complementing the occupational knowledge of the students with the soft skills, presentation techniques, creating a resume, job interview, goal setting and career development guidance.
Contribution of the course towards professional education	Helping students acquire and develop the knowledge and skills necessary on job hunting and career development.
Outcomes of the course	To equip the students with the skills and knowledge of finding a job, career development and planning.
Textbook of the course	Handouts
Other reference books	None
Required material for the course	None

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Job Interview
2	Creating a Resume
3	Presentation Techniques
4	Body Language
5	Cultural Differences at work
6	Goal Setting
7	Soft Skills
8	Midterm
9	Midterm
10	Using Social Media in Business
11	Guest speaker
12	Business Ethics and Professional Manners
13	How to dress for Interview
14	Presentation
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**x**		
7	Communicating effectively in oral and written form both in Turkish and English.		**x**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	**x**			
9	Understanding of professional and ethical responsibility		**x**		
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Aysegul Biriciker-Guzel

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225391 **COURSE TITLE:** Communication and Culture I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	Current Issues in English I or II
Brief content of the course	A course to discuss English cultures and spoken accents and to improve the English vocabulary, listening, speaking and critical thinking skills of students.
Objectives of the course	To help students to communicate in English in a natural way; To help students to learn more about the target culture; and To help students to become critical thinkers.
Contribution of the course towards professional education	Improving communication skills in English
Outcomes of the course	Students who take this course will communicate better
Textbook of the course	None
Other reference books	American TV commercials and public announcements; Documentaries from CNN, BBC and DeutcheWelle
Required material for the course	A monolingual dictionary

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the course
2	Listening/Speaking skills
3	Advertisement 1 and discussion
4	Advertisement 2 and discussion
5	Advertisement 3 and discussion
6	Advertisement 4 and discussion
7	Documentary 1 and discussion
8	Midterm
9	Midterm
10	Documentary 2 and discussion
11	Documentary 3 and discussion
12	Documentary 4 and discussion
13	Documentary 5 and discussion
14	Documentary 6 and discussion
15- 16	Oral Presentations

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.	**X**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	**X**			
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Assistant Prof. Dr. Odilea Rocha Erkaya

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226353 **COURSE TITLE:** Communication and Culture II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
6	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	Current Issues in English I or II
Brief content of the course	A course on history and geography to introduce students to the wonders of the world, their locations, and importance to engineering students.
Objectives of the course	To help students to communicate in English in a natural way; To help students to learn about wonders of the world; To help students to become critical thinkers
Contribution of the course towards professional education	It will help to improve students' English communication skills.
Outcomes of the course	Students who take this course will communicate better in English.
Textbook of the course	none
Other reference books	Documentaries from CNN, BBC and DeutcheWelle
Required material for the course	A monolingual dictionary

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the course
2	Communication and oral presentation skills
3	Forgotten wonders of the world
4	Forgotten wonders of the world
5	Forgotten wonders of the world
6	Modern wonders of the world
7	Modern wonders of the world
8	Midterm
9	Midterm
10	Modern wonders of the world
11	New/Natural wonders of the world
12	New/Natural wonders of the world
13	New/Natural wonders of the world
14	New/Natural wonders of the world
15-16	Oral Presentations

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.	**X**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	**X**			
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Assistant Prof. Dr. Odilea Rocha Erkaya

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226365 **COURSE TITLE:** Communication via Electronic Media

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
6	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (x) if there is high design content]	**General Education**	**Humanities**
	( )		3

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm			Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project	2	60	Oral exam		
	Other (……)			Other (……)		
Final			40			
Makeup exam (Oral/Written)						

Prerequisites	None
Brief content of the course	This is a visual communication and graphic design course. First, the importance of the communication is explained then the electronic media is discussed in detail. The focus is on the graphic design that is to be published on the internet.
Objectives of the course	1. to give students a better understanding of digital design 2. to teach them the skills for the basic graphic design
Contribution of the course towards professional education	This course will improve the communication and presentation skills of students. They can use this skills in both their professional and daily lives.
Outcomes of the course	Students who complete this course successfully will learn how to use a graphic design application on the computer, manipulate digital photographs, design a web page, incorporate graphics, video, audio and text on a web page and beyond these how to create a composition with a concept.
Textbook of the course	
Other reference books	1. Matthews, C., & Bouton, G.D. (2009). *Photoshop CS4 QuickSteps*, N.Y.: McGraw-Hill Osborne Media. 2. Becer, E. (1997). *İletişim ve Grafik Tasarım.* Ankara: Dost Kitabevi Yayınları. 3. Dabner, D. (2005). *Graphic Design School: A Foundation Course in the Principles and Practices of Graphic Design*, N.J.: Wiley. 4. Carter, R. (1993). *Typographic Design: Form and Communication*, N.Y.: Wiley,. 5. Craig, J. (1983). *Graphic Design Career Guide*, N.Y.: Watson-Guptill Publications. 6. Wheeler, R. A. (2003). *Designing Brand Identity: A Complete Guide to Creating, Building, and Maintaining Strong Brands,* N.Y.: John Wiley and Sons. 7. Bektaş, D. (1992). *Çağdaş Grafik Tasarımın Gelişimi*. İstanbul: Yapı Kredi Yayınları.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Importance of Communication and Electronic Media
2	Elements of Communication, Design Components
3	Introduction to Adobe Photoshop®
4	Specifying Color Modes and Color Models, Exploring Photoshop® Basics
5	Using Layers, Masks, Paths
6	Digital Photography and Manipulating Digital Photographs
7	Ability to Maintain Consistent Effects Across Media
8	Midterm
9	Midterm
10	Creating a Layout with a Concept
11	Preparing Artworks to Printing and Publishing
12	Ideas to Create a Website Page
13	Design a Web Interface Layout
14	A Brief Overview of Essentials of Audio, Video and Animation
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.		**X**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**X**	
7	Communicating effectively in oral and written form both in Turkish and English.		**X**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**X**		
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Burcu Okcu

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225398 **COURSE TITLE:** Communication via Printed Media

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm			Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project	2	60	Oral exam		
	Other (……)			Other (……)		
Final			40			
Makeup exam (Oral/Written)						

Prerequisites	None
Brief content of the course	This is a visual communication and graphic design course. First, the importance of the communication is explained then the printed media is discussed. The focus is on the graphic design that is to be printed—from pamphlets to the billboard signs.
Objectives of the course	1. to give students a better understanding of printed page design 2. to teach them the skills for the basic graphic design
Contribution of the course towards professional education	This course will improve the communication and presentation skills of students. They can use this skills in both their professional and daily lives.
Outcomes of the course	Students who complete this course successfully will learn how to use a graphic design application on the computer, design a printed page, business card, logos, stationary and incorporate graphics and text on a page, create digital illustrations and beyond these how to create a composition with a concept.
Textbook of the course	*Pocket Pal: A Graphic Arts Production Handbook*, 19th Ed. Memphis: International Paper Company, 2003.
Other reference books	1. Adobe Creative Team (2008). *Adobe Illustrator CS4 Classroom in a Book*, C.A.: Adobe Press. 2. Becer, E. (1997). *İletişim ve Grafik Tasarım*, Ankara: Dost Kitabevi Yayınları. 3. Dabner, D. (2005). *Graphic Design School: A Foundation Course in the Principles and Practices of Graphic Design*, N.J.: Wiley. 4. Carter, R. (1993). *Typographic Design: Form and Communication*, N.Y.: Wiley. 5. Craig, J. (1983). *Graphic Design Career Guide*, N.Y.: Watson-Guptill Publications. 6. Wheeler, R. A. (2003). *Designing Brand Identity: A Complete Guide to Creating, Building, and Maintaining Strong Brands*, N.Y.: John Wiley and Sons. 7. Bektaş, D. (1992). *Çağdaş Grafik Tasarımın Gelişimi*. İstanbul: Yapı Kredi Yayınları.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Importance of Communication and Printed Media
2	Elements of Communication, Design Components
3	Introduction to Adobe Illustrator®
4	Specifying Color Modes and Color Models, Exploring Illustrator® Basics
5	Using Layers, Paths
6	Creating Digital Illustrations
7	Ability to Maintain Consistent Effects Across Media
8	Midterm
9	Midterm
10	Typography, Logotypes and Logos
11	Printing and Publishing Artworks, Paper and Digital Prepress
12	Corporate Identity Ideas
13	Brochure and Business Card Layouts
14	Integrate with Adobe InDesign® Layouts
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**X**	
7	Communicating effectively in oral and written form both in Turkish and English.		**X**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**X**		
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Burcu Okcu

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151224554 **COURSE TITLE:**Culture and Social Change

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
4	3	0	3	4	Compulsory () Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	40	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final			60			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	**Description** Generally, this course will focus on the term of "culture" and its characteristics. As a part of this course, different aspects to every different cultural form will be introduced around historical changes and social movements. To provide social change around the world comprehensible, course will enlighten the relations among cultures and social movements. Globalizing movement will become the basis for this course and social relations will be evaluated within the framework of this macro and scale. The effects of illumination Movement, Scientific, French, Industrial Revolutions, Modernity and technological developments will receive a special attention. As a special part of culture, environment (its effect) is considered
Objectives of the course	To make the students have ideas about Culture and Social Change and their effects on each other. To make them understand through these effects how social movements and transformation have occurred. It is about drawing a big and simple picture to be understood this process.
Contribution of the course towards professional education	To teach students how society works, the impact of science and technology and the nature of social change. To enable students to grasp how society works and to think critically about social issues.
Outcomes of the course	The students who have taken this class, -will be able to explain the progress and the conceptual dimensions of the cultural differentiations, - will be able to explain the social and the economic relations between technology and society. They have an idea about its historical dimensions and process, -will be able to determine how any technological innovation diffuses in a social environment and what kind of variables have an effect on this diffusion, and also see its economic effects, -will be able to explain relations of capital and social change movements globally. -will be able to notice how social change occurs within the framework of all these variables and basis of social and cultural transformation.
Textbook of the course	Dürrschmidt, J. 2007. *Globalization, modernity and social change : hotspots of transition.* Basingstoke, Hampshire : Palgrave Macmillan. Griswold, W. 2004. *Cultures and societies in a changing world*.(2nd Edition).

Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	The term of "Culture" and its characteristics
2	Cultural differentiations in the world and effects of environment
3	Social change, Modernity and Capitalism
4	Relation of modernism and capitalism
5	Theory of Karl Marx
6	Watching a movie or documentary about Marxist theory
7	Theory of Max Weber and social change
8	Midterm
9	Midterm
10	Marxist Development Theories I
11	Marxist Development Theories II
12	Post-Constructivism and social change
13	Globalization, advanced technology and information society
14	Watching a movie or a documentary about course around the theories.
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**x**		
7	Communicating effectively in oral and written form both in Turkish and English.		**x**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**x**		
9	Understanding of professional and ethical responsibility		**x**		
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s): **Date**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223241 **COURSE TITLE:** Current Issues in English I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
3	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	None
Brief content of the course	A course to discuss current issues happening all around the world to improve the English vocabulary, and listening, speaking and reading skills of students.
Objectives of the course	To teach students reading techniques; To help students to build-up vocabulary by understanding words used in different contexts; To help students to understand main ideas when reading articles and watching documentaries; and To help students to become fluent in English.
Contribution of the course towards professional education	Help students with critical thinking skills.
Outcomes of the course	By the end of the course, students will be better prepared to hold a conversation in English.
Textbook of the course	none
Other reference books	Documentaries from CNN, BBC and DeutcheWelle, and articles from WWW
Required material for the course	A monolingual dictionary

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the course
2	Reading techniques
3	Article 1 on a current issue and discussion
4	Article 2 on a current issue and discussion
5	Article 3 on a current issue and discussion
6	Article 4 on a current issue and discussion
7	Listening techniques
8	Midterm
9	Midterm
10	Documentary 1 on a current issue and discussion
11	Documentary 2 on a current issue and discussion
12	Documentary 3 on a current issue and discussion
13	Documentary 4 on a current issue and discussion
14	Oral Presentation techniques
15-16	Oral Presentations

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.	**X**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing	**X**			
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Assistant Prof. Dr. Odilea Rocha Erkaya

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151224243 **COURSE TITLE:** Current Issues in English II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
4	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	Current Issues in English I
Brief content of the course	A course to discuss current issues happening all around the world to improve the English vocabulary, listening, speaking and reading skills of students.
Objectives of the course	To help students to build-up vocabulary by understanding words used in different contexts; To help students to understand main ideas when watching documentaries; and To help students to become fluent in English.
Contribution of the course towards professional education	The course will help students to improve their listening, speaking, critical, and oral presentation skills.
Outcomes of the course	Students will feel more comfortable when they speak English.
Textbook of the course	
Other reference books	Documentaries from CNN, BBC and DeutcheWelle, and articles from WWW
Required material for the course	A monolingual dictionary

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the course
2	Listening techniques
3	Documentary 1 and discussion
4	Documentary 2 and discussion
5	Documentary 3 and discussion
6	Documentary 4 and discussion
7	Documentary 5 and discussion
8	Midterm
9	Midterm
10	Documentary 6 and discussion
11	Documentary 7 and discussion
12	Documentary 8 and discussion
13	Documentary 9 and discussion
14	Oral Presentation Techniques
15-16	Oral Presentations

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	**x**			
7	Communicating effectively in oral and written form both in Turkish and English.	**x**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Assistant Prof. Dr. Odilea Rocha Erkaya

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225400 **COURSE TITLE:** Introduction to Financial Markets

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
Fall	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		(3)

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final	1		50			
Makeup exam (Oral/Written)	Written					

Prerequisites	
Brief content of the course	Money, bank and Money supply, structure and properties of financial system, financial firms and their functions Money and capital markets. Banks and their functions, use of funds and resources by banks, bank Money and Money supply, active-passive management and commercial banking, determining interest rates, portfolio management and risk, aim and tools of monetary policies. Role and effects of policies of Central banks on the economy.
Objectives of the course	It is important to understand money market, monetary policies and their functions in order to take better decisions about the economy. Thus, the aim of this course is to teach money market operations and how the economic authorities make their decisions.
Contribution of the course towards professional education	Students who take this course may use the taught material in making the financial system related decisions.
Outcomes of the course	Students who take this course 1.understand the Money concept 2.learn how the Money market operates 3. knows the effects of monetary policies on decisions of economic actors.
Textbook of the course	Frederic S. Mishkin, (2003), The Economics of Money, Banking, and Financial Markets, Addison Wesley, Sixth Edition, Canada
Other reference books	1. Mehmet Günal, (2006), Para Banka ve Finansal Sistem, Yeni dönem Yayıncılık, 1. Baskı, Ankara. 2. Hanifi Aslan (2009), Para teorisi ve Politikası, Alfa Aktüel yayınları Alfa Akademi Ltd., Bursa. 3. Mahfi Eğilmez, Ercan Kumcu (2004), Ekonomi Politikası Teori ve Türkiye Uygulaması, Remzi Kitapevi,
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Why do we study Money, bank and finacial market?
2	Financial System
3	Money concept
4	Interest rate concept and its determination
5	Foreign currency market
6	Definition of banks
7	Banks functions and operations
8	Midterm
9	Midterm
10	Determination of Money supply
11	Central bank
12	Monetary policies
13	Tools of monetary policies
14	Application of monetary policies
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English.			**x**	
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**x**		
9	Understanding of professional and ethical responsibility			**x**	
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.		**x**		
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.			**x**	

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Yrd. Doç. Dr. İnci Parlaktuna

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223239 **COURSE TITLE:** GERMAN I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
3	3	0	3	4	Compulsory () Elective (x)	Turkish ( ) German (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	0 ( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)	Oral					

Prerequisites	-
Brief content of the course	Content of the course: Artikel, Singular und Plural, das Präsens, trennbare und untrennbare Verben, starke Verben, die Zahlen, die Zeit, die Wortstellung, Präpositionen mit dem Dativ, Präpositionen mit dem Akkusativ, Wechselpräpositionen, Fragepronomen, Personalpronomen, Possessivpronomen, Modalverben
Objectives of the course	The main aim of this course is to help students to get the basics of the German grammar.
Contribution of the course towards professional education	By the end of this course student will be able to: **1.** Read, write and understand simple German
Outcomes of the course	
Textbook of the course	1. **Schulz-Griesbach:** Deutsch für Ausländer. 2. **Dreyer-Schmitt:** Lehr- und Übungsbuch der deutschen Grammatik 3. **Vlachos N.:** Exakt 1-2 4. **Schulz-Sundermeyer:** Deutsche Sprachlehre für Ausländer 5. **Mahler G., Schmitt R.:** Wir lernen Deutsch, 1-2
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Der Artikel, das Verb
2	Konjugation Praesens, Personalpronomen
3	Die Nomen, Singular und Plural
4	Fragepronomen, der Akkusativ
5	Der Satz, die Zahlen
6	Praesens der starken Verben
7	Trennbare Verben
8	Midterm
9	Midterm
10	Wiederholung und Übungen
11	Praepositionen mit dem Dativ
12	Praepositionen mit dem Akkusativ
13	Der Dativ
14	Possessivpronomen
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**x**	
7	Communicating effectively in oral and written form both in Turkish and English.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**x**		
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151224244 **COURSE TITLE:** GERMAN II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
4	3	0	3	4	Compulsory () Elective (x)	Turkish ( ) German (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	German I
Brief content of the course	Demonstrativpronomen, Wechselpräpositionen, reflexive Verben, das Präteritum, das Perfekt, Ergänzung der Deklination, Verben mit Präpositionen, der Genitiv
Objectives of the course	The main aim of this course is to help students to get the basics of the German grammar.
Contribution of the course towards professional education	By the end of this course student will be able to: **2.** Read, write and understand simple German
Outcomes of the course	
Textbook of the course	6. **Schulz-Griesbach:** Deutsch für Ausländer. 7. **Dreyer-Schmitt:** Lehr- und Übungsbuch der deutschen Grammatik 8. **Vlachos N.:** Exakt 1-2 9. **Schulz-Sundermeyer:** Deutsche Sprachlehre für Ausländer 10. **Mahler G., Schmitt R.:** Wir lernen Deutsch, 1-2
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Demonstrativpronomen
2	Demonstrativpronomen
3	Wechselpräpositionen
4	Wechselpräpositionen
5	Reflexive Verben
6	Reflexive Verben
7	Reflexive Verben
8	Midterm
9	Midterm
10	Das Präteritum, das Perfekt
11	Ergänzung der Deklination
12	Verben mit Präpositionen
13	Der Genitiv
14	Der Genitiv
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**x**	
7	Communicating effectively in oral and written form both in Turkish and English.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**x**		
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225341 **COURSE TITLE:** GERMAN III

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	3	0	3	4	Compulsory () Elective (x)	Turkish ( ) German (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	German II
Brief content of the course	Unbestimmte Pronomen, Fragepronomen “was für ein-“ und “welch-“ Adjektivdeklination und Adjektivkomparation, das Plusquamperfekt, Relativpronomen und Relativsätze, Nebensätze.
Objectives of the course	The main aim of this course is to help students to get the intermediate German grammar.
Contribution of the course towards professional education	By the end of this course student will be able to: **3.** Read, write and understand the intermediate German
Outcomes of the course	
Textbook of the course	11. **Schulz-Griesbach:** Deutsch für Ausländer. 12. **Dreyer-Schmitt:** Lehr- und Übungsbuch der deutschen Grammatik 13. **Vlachos N.:** Exakt 1-2 14. **Schulz-Sundermeyer:** Deutsche Sprachlehre für Ausländer 15. **Mahler G., Schmitt R.:** Wir lernen Deutsch, 1-2
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Unbestimmte Pronomen
2	Unbestimmte Pronomen
3	Fragepronomen “was für ein-“ und “welch-“
4	Fragepronomen “was für ein-“ und “welch-“
5	Adjektivdeklination und Adjektivkomparation
6	Adjektivdeklination und Adjektivkomparation
7	das Plusquamperfekt
8	Midterm
9	Midterm
10	das Plusquamperfekt
11	Relativpronomen und Relativsätze,
12	Relativpronomen und Relativsätze,
13	Nebensätze.
14	Nebensätze.
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**x**	
7	Communicating effectively in oral and written form both in Turkish and English.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**x**		
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151226344 **COURSE TITLE:**INTERMEDIATE FRENCH II

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
6	3	0	3	4	Compulsory () Elective (x)	Turkish ( ) French (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	( )		3

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
	Type	**Number**	**%**	**Activity Type**	**Number**	**%**
Midterm	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)	Oral					

Prerequisites	Intermediate French I
Brief content of the course	Cartes d'identité. Accord de l'adjectif. L'heure, comment demander l'heure? Les films a la télévision. Les prépositions .Les démonstratifs. Les annonces. Le prêt. Faire quelque chose. Place du pronom. Adjectifs. Moyennes. Le passe récent. Le meilleur, les meilleures.
Objectives of the course	
Contribution of the course towards professional education	A la fin de ce cours les étudiants auront appris la grammaire française
Outcomes of the course	
Textbook of the course	Méthode de français, langue étrangère.
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Cartes d'identité...
2	Accord de l'adjectif
3	L'heure, comment demander l'heure?
4	L'heure, comment demander l'heure?
5	Les films a la télévision
6	Les films a la télévision
7	Les prépositions .Les démonstratifs.
8	Midterm
9	Midterm
10	Les annonces. Le prêt.
11	Les annonces. Le prêt.
12	Faire quelque chose. Place du pronom.
13	Adjectifs. Moyennes.
14	Le passe récent. Le meilleur, les meilleures
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**X**		
7	Communicating effectively in oral and written form both in Turkish and English.		**X**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225343 **COURSE TITLE:** Intermediate French I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) French (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	Beginning French II
Brief content of the course	Donner des indications temporelles. Raconter et exprimer ses sensations.Comprendre un texte informatif.
Objectives of the course	Comprendre un récit situé dans le passé.Décrire des vêtements.Comprendre et rédiger une petite annonce.Accepter et refuser une proposition ou une invitation.
Contribution of the course towards professional education	Communication skills in a foreign language (French) Understanding a foreign culture (French) Writing a CV in French Interview in French
Outcomes of the course	1.Describing events from past 2. Writing an advertisement or announcement. 3. Responding to a job offer 4. Describing event that was experienced in past. 5. Writing a CV 6. Inviting people for an event
Textbook of the course	Francofolie I
Other reference books	Grammaire progressive du français.
Required material for the course	none

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Raconter en situant chronologiquement dans le temps.
2	Donner des indications temporelles.
3	Comprendre un récit situé dans le passé.
4	Décrire des vêtements.
5	Interviewer une personne.
6	Comprendre et rédiger une petite annonce de recherche d'emploi.
7	Répondre à une offre d'emploi.
8	Midterm
9	Midterm
10	Comprendre et rédiger un CV.
11	Inviter et proposer une activité.
12	Accepter et refuser une proposition ou une invitation.
13	Raconter et exprimer ses sensations.
14	Comprendre un texte informatif.
15-16	Final Exam

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**X**		
7	Communicating effectively in oral and written form both in Turkish and English.		**X**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Mehmet Çetin

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223554 **COURSE TITLE:** Introduction to Accounting

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final	Written	1	50			
Makeup exam (Oral/Written)	Written					

Prerequisites	**S**atisfactory completion of Entry-level Mathematics (ELM) requirement
Brief content of the course	Overview of the Accounting Environment, Business Activities and the Role of Accounting,Financial Statements and Underlying Accounting Concepts,Income Statement, Completing the Accounting Cycle, Merchandise Transactions, Inventories, Financial Statements,Current Assets, Current Liabilities, Investments, Measure of Operating Capacity, Long-Term Liabilities, and Shareholder's Equity.
Objectives of the course	Accounting is a fundamental concept in financial issues. Through learning the accounting applications of financial decisions students will be able to observe financial issues in practical concerns
Contribution of the course towards professional education	A survey of accounting concepts designed for students desiring a general knowledge of accounting. Emphasis placed on the use and analysis of accounting data.
Outcomes of the course	• Understand general aspects of business operations, including the differences between proprietorships, partnerships, and corporations as well as the differences between debt and equity financing. • Explain the theory and practice of accounting underlying the major categories that generally appear in published financial statements. • Identify the basic economic events most common in business operations and understand how they would be shown in published financial statements. • Understand the impact of alternative accounting methods on financial statements. • Understand the role of accounting and its limitations.
Textbook of the course	HONGREN & HARRISON " ACCOUNTING" 7 TH EDITION,2007
Other reference books	WEYGANDT, J, Jerry; KIESO E. Donald; KIMMEL D. Paul 5th Edition, (1999).Accounting Principle
Required material for the course	Data projector and laptop computer

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Overview of the Accounting Environment, Business Activities and the Role of Accounting, , , ,
2	Financial Statements and Underlying Accounting
3	Concepts,Income Statement
4	Completing the Accounting Cycle
5	Inventories, Merchandise Transactions
6	Financial Statements
7	Current Assets
8	Midterm
9	Midterm
10	Current Liabilities
11	Investments
12	Measure of Operating Capacity
13	Long-Term Liabilities
14	Shareholder's Equity
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**X**	
7	Communicating effectively in oral and written form both in Turkish and English.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**X**		
9	Understanding of professional and ethical responsibility		**X**		
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Prof. Dr. Seval Selimoğlu

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225402 **COURSE TITLE:** Introduction to Marketing

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	2	1	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (…..)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	The course includes introduction to marketing, customer relationship management, consumer behavior, business to business marketing, segmentation/targeting/ positioning strategies, brand management, sales and pricing strategies, integrated marketing communication, advertising and public relations, sale force management and e-marketing.
Objectives of the course	To give information about basics of marketing, product and brand managment strategies, sales strategies and a brief information about the tools of communication.
Contribution of the course towards professional education	In the globalization age, companies conduct worldwide business and generally prefer to utilize engineers in the marketing and sales departments for either equipment and material sales or business and consulting services sales. As a result, engineers needs to be equipped with the basics of marketing, sales, consumer behavior and communication tools in order to fulfill requirements that are raised by the companies.
Outcomes of the course	**To understand, evaluate, analyse and explain:** - the marketing strategies, and the marketing mix - the preparing marketing plan - the building customer relationship - the positioning strategies for targeted marketing - how to create a brand - the setting price and developping pricing policy - the integrated marketing communication
Textbook of the course	Kotler, P. and Armstrong, G. (2006) Principles of Marketing. Eleventh Edition. Pearson Prentice Hall: New Jersey, USA
Other reference books	- Solomon, M.R. (2004) Consumer Behavior: Buying, Having and Being. Sixth Edition. Pearson Education: New Jersey - Kapferer, J.N. (2008) The New Strategic Brand Management. Fourth Edition. Kogan Page: United Kingdom - Doyle, P. and Stern, P. (2006) Marketing Management and Strategy. Fourth Edition. Prentice Hall: England
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to marketing and costumer relationship
2	Marketing strategy and marketing mix
3	Consumer markets and consumer behavoir
4	Business to business markets and business buyer behaviour
5	Market segmantation, target marketing and positioning a product
6	Brand building
7	Introduction to general pricing approaches and strategies
8	Midterm
9	Midterm
10	Integrated marketing comunication strategies
11	Advertising and public relations
12	Personal selling and direct marketing
13	Creating competitive advantage strategies
14	The global marketplace and E-Marketing
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.		**X**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**X**		
9	Understanding of professional and ethical responsibility		**X**		
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.		**X**		
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Elif Eşiyok Sönmez

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227494 **COURSE TITLE:** ORAL COMMUNICATION

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)	Midterm = Written; Final = Oral Presentation					

Prerequisites	None
Brief content of the course	Emphasis on oral presentation skill, helping students to strengthen their listening and speaking skills.
Objectives of the course	The goal of the course is to teach students to prepare and deliver presentations.
Contribution of the course towards professional education	Oral presentation skill is a must in all professions.
Outcomes of the course	By the end of the course, students will be able to prepare and deliver presentations.
Textbook of the course	Grussendorf, M. (2007). *English for Presentations*. Oxford: Oxford University Press.
Other reference books	Material downloaded from the Internet
Required material for the course	Textbook

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the Course
2	Welcoming your audience, Introducing yourself and the topic
3	Dealing with nervousness, Body language
4	Tips on presenting to an English-speaking audience
5	Presentation tools, Using approximate numbers effectively
6	Creating effective visuals, Presenting visuals
7	Types of visuals, Describing graphs and charts
8	Midterm
9	Midterm
10	Interpreting visuals, Tips for describing trends
11	Concluding a presentation
12	Strategies for a good conclusion
13	Handling the question and answer session
14	Oral Presentations
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.	**X**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**X**		
9	Understanding of professional and ethical responsibility		**X**		
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.		**X**		
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Odilea Rocha Erkaya

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151225397 **COURSE TITLE:** SCIENCE AND SOCIETY

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
5	3	0	3	4	Compulsory () Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	40	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	60			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	***Description*** This is a course to analyze and discuss the Science and Technology in Modern Society through papers, books and PowerPoint presentations about Science and Society subjects, determined for weeks. This course is not only about Science and Technology; it is also about understanding effects of social characteristics on acceptance of Science and Technology and the importance of using this information on production of a new technology.
Objectives of the course	To make the students have ideas about Science and Society and their effects on each other. To make them understand through these effects how social change and transformation have occurred. It is about drawing a big and simple picture to be understood this process.
Contribution of the course towards professional education	***Learning objectives:*** To teach students how scientific works and technology is related to society; how they affect social life and are affected by social context, making our life more complicated and which characteristics of societies are related to adoption or acceptance of new technologies and scientific developments . In addition, students' language skills (listening and interpreting) will be improved To enable students to grasp how science and technology affects society (i.e. computers, satellites, nuclear power as well as consumer electronics) by using PowerPoint presentations in class. The materials used in the class will help students to understand and interpret ideas in English through active participation in the class
Outcomes of the course	The students who have taken this class, -will be able to explain the progress and the conceptual dimensions of the science, - will be able to explain the social and the economic relations between technology and society. They have an idea about its historical dimensions and process, -will be able to determine how any technological innovation diffuses
Textbook of the course	Bridgestock, Martin….[et al.]. 1998. Science, Technology and Society. Cambridge: Cambridge University Press. -Erickson, Mark. 2005. Science, Culture and Society: *Understanding science in 21st century*. Cambridge, UK: Polity. -Kleinman, Daniel L. 2005. Science and Technology in Society: *From biotechnology to the internet.* Maiden, Mass: Blackwell Pub.

	-Rattansi, P.M.…[et al.] 1972. Science and Society : 1690-1990.(Edited by Peter Mathias). Cambridge: Cambridge University Press.
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	The Term of Science, its definition and development
2	The Term of Technology, its definition and development
3	Science and Society I - Science, Technology and Society in Ancient Times - Science, Technology and Society in the Middle Ages
4	Science and Society II - The Renaissance, Enlightenment and Industrial Revolution/- Post-industrial Period
5	Social Change Theories and Technology
6	The personal and societal characteristics which affected the diffusion of technological innovations
7	Interaction of Technology and Social Environment I - Mass Communication Medium/- Computer Technology and its effects
8	Midterm
9	Midterm
10	Interaction of Technology and Social Environment II - Genetic Engineering/- Bio-medico and its effects
11	War, Technology and Society
12	The Effects of Technology on Natural Environment
13	Technology, Turkey and History
14	Doomsday Book or another movie about the course (Watching a South Korean Movie About Science, Technology and Society)
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**X**		
9	Understanding of professional and ethical responsibility		**X**		
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.		**X**		
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.		**X**		

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151223242 **COURSE TITLE:** The Short Story

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
3	3	0	3	4	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		3

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)						

Prerequisites	None
Brief content of the course	The following elements of short stories are discussed: characters, characterization, point of view, setting, plot, conflict, complications, climax, resolution, sequence, turning point and motivation, symbol, simile, and metaphor.
Objectives of the course	To improve the English vocabulary and reading skills of students, and to help students to become critical thinkers.
Contribution of the course towards professional education	It will improve English comprehension skills of students
Outcomes of the course	Students who successfully complete this course should be able to analyze short stories without difficulties.
Textbook of the course	O.R. Erkaya, Stories of my Life (Being published)
Other reference books	
Required material for the course	An English-to-English dictionary

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to the course
2	Story 1--Literary patterns
3	Story 1 continues; Story 2—Literary patterns
4	Story 2 continues; Story 3—Literary patterns
5	Story 3 continues; Story 4—Literary patterns
6	Story 4 continues; Review
7	Story 5
8	Midterm
9	Midterm
10	Story 6
11	Story 6 continues; Story 7
12	Story 7 continues; Story 8
13	Story 8 continues; Review
14	Review
15-16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**X**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**X**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.				**X**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English.	**X**			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Assistant Prof. Dr. Odilea Rocha Erkaya

Signature(s):

Date:

ESOGU ELECTRICAL - ELECTRONICS ENGINEERING DEPARTMENT

TECHNICAL ELECTIVES (3+0)

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228421 **COURSE TITLE:** Nonlinear Control Systems

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
8	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	3 ( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework	2	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	Fundamentals of Control Systems
Brief content of the course	Differential equation representation of nonlinear systems. Simple plane pendulum. Simple double pendulum. Equilibrium points. Limit cycles. Bifurcations. Finite escape points. Multiple isolated equilibria. Chaos. Phase plane analysis. Lyapunov analysis. Stability. Linearization and local stability. Lyapunov's direct method. Positive definite functions. Equilibrium point theorems. Invariant set theorems. Feedback linearization. Input state linearization. Input output linearization. Sliding control. Sliding surfaces. Switching control laws.
Objectives of the course	Fundamental concepts of nonlinear control systems. Stability analysis of control systems. Introductory level nonlinear control system design.
Contribution of the course towards professional education	Aircrafts, land vehicles, ships, and robots form a significant part of the industry. These systems are effectively modelled and analyzed by nonlinear system tools.
Outcomes of the course	Students who successfully complete this course 3) Analyze a class nonlinear system models. 4) Design control laws for a class of nonlinear control systems. 5) Understand stability in the nonlinear systems context.
Textbook of the course	J.-J. E. Slotine and W. Li, Applied Nonlinear Control, Prentice Hall, 1991.
Other reference books	H. K. Khalil, Nonlinear Systems, Prentice Hall, 2002.
Required material for the course	Basic MATLAB software.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Differential equation representation of nonlinear control systems, Numerical solutions of nonlinear differential equations by MATLAB
2	The simple plane pendulum, the double plane pendulum. Equilibrium points
3	Limit cyscles, Bifurcations, Finite escape time, Multiple isolated equilibria, Chaos
4	Phase plane analysis, Singular points, Symmetry, Constructing the phase portrait,
5	Phase plane analysis of linear systems, More on limit cycles
6	Lyapunov analysis, stability
7	Linearization and local stability, Lyapunov's direct method
8	Midterm
9	Midterm
10	Positive definite Functions, Lyapunov functions
11	Invariant set theorems
12	Feedback linearization,
13	Sliding mode control, sliding surfaces
14	Switching control laws
15,16	Final exam

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	√			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		√		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s): Prof. Dr. Abdurrahman Karamancıoğlu

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228543 **COURSE TITLE:** Satellite Communication Systems

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
Spring	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
0	3 ( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	20	Quiz		
	Quiz	2	10	Lab performance		
	Homework	2	10	Report		
	Project	1	20	Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Satellite orbits, radiowave propagation, free space loss and atmospheric losses, analog and digital communication link budgets, satellite networks.
Objectives of the course	Teaching radiowave propagation, link budget, satellite orbits and analysis and design of several types of satellite networks.
Contribution of the course towards professional education	Providing the ability to analyze and design satellite communication systems.
Outcomes of the course	1. Define free space loss, Friis transmission equation, atmospheric effects on radiowave propagation. 2. Solve real engineering problems involving fundamental communication link budget. 3. Distinguish types of satellite orbits. 4. Define elevation and azimuth angles of an earth station. 5. Apply link budget analysis to different types of satellite networks.
Textbook of the course	Gökhan Çınar, "Uydu Haberleşme Sistemleri", Ders Notu, 2014.
Other reference books	- Roger L. Freeman, "Radio System Design for Telecommunication", 3rd edition, Wiley-IEEE Press, 2007. - Dennis Roddy, "Satellite Communications", 4th edition, McGraw-Hill Professional, 2006. - Bruce R. Elbert, "Introduction to Satellite Communication", 3rd edition, Artech House Publishers, 2008.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Review on electromagnetic waves and antennas.
2	Review on electromagnetic waves and antennas.
3	Orbital mechanics. Types of satellite orbits. Earth station look angles.
4	Free space loss. Atmospheric losses. Fundamental link budget.
5	Analog communication links.
6	Digital communication links.
7	Digital communication links.
8	Midterm
9	Midterm
10	Satellite footprint maps. Receive-only systems.
11	Single-terminal send&receive links.
12	Point-to-point links.
13	Very-small-aperture-terminal networks.
14	Very-small-aperture-terminal networks.
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**X**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.			**X**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Gökhan Çınar

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227497 **COURSE TITLE:** DIGITAL SIGNAL PROCESSING

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
7	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
0	3 ( )	0	0

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm	1	30	Quiz		
	Quiz	3	30	Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Oral					

Prerequisites	Systems and Signals
Brief content of the course	Discrete-time signals and systems. Sampling of continuous-time signals. Z-Transform. Transform analysis of linear time-invariant systems. Structures for discrete-time systems.
Objectives of the course	To define the discrete-time signals and systems, and their properties. To give basic ideas about the relationships between the discrete and continuous-time signals. To convert the linear and time-invariant systems into different type of systems. To investigate the structures of discrete-time systems.
Contribution of the course towards professional education	In this course, students will learn the conversion principles (how and in what conditions) of continuous or analog signals into discrete signals. They will also know the properties of discrete-time signals and, design and analyze the systems which use these signals.
Outcomes of the course	1- Students will analyze the discrete- and continuous-time signals by using computer. 2- Students will design the discrete-time systems with desired properties. 3- Students can sample any analog signal and change its sampling frequency. 4- Students will know how properties of discrete-time systems can be determined.
Textbook of the course	A.V. Oppenheim and R.W. Schafer, Discrete-Time Signal Processing, Prentice-Hall, Inc., 2009.
Other reference books	A.V. Oppenheim and R.W. Schafer, Digital Signal Processing, Prentice-Hall,Inc., 1995. M.D. Srinath, P.K. Rajasekaran and R. Viswanathan, Introduction to Statistical Signal Processing with Applications, Prentice Hall, Inc., 1996. J.R. Deller, J.G. Proakis and J.H.L. Hansen, Discrete-Time Processing of Speech Signals, Macmillan, Inc., 1993. L.R. Rabiner and R.W. Schafer, Digital Processing of Speech Signals, Prentice-Hall, Inc., 1978.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Discrete-time signals
2	Discrete-time systems
3	Linear time-invariant systems and their properties
4	Frequency domain analysis of discrete-time signal and systems
5	Periodic sampling and representation of sampling on the frequency domain
6	Changing the sampling rate by using discrete-time process
7	Z-transform
8	Midterm
9	Midterm
10	Inverse Z-transform
11	Transform analysis of linear time-invariant systems
12	All-pass and minimum-phase systems
13	Basic network structures of FIR filters
14	Basic network structures of IIR filters
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**x**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**x**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**x**		
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. M. Bilginer Gülmezoğlu

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227453 **COURSE TITLE:** ELECTRICAL MACHINERY

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
0	3 ( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	30	Quiz		
	Quiz	3	30	Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Oral					

Prerequisites	Principles of Energy Conversion
Brief content of the course	Basic concepts of rotating machines. DC generators and motors. Induction motors. Synchronous generators. Special electrical machines.
Objectives of the course	To learn the constructional features and operational principles of electrical machines used in industrial applications. To know the solution methods in order to solve problems related with the electrical machines.
Contribution of the course towards professional education	In this course, students will be familiar with electrical generators and motors. They will also have sufficient theoretical information in order to analyze systems including electrical machines.
Outcomes of the course	1- Students will learn the theory of electrical machines. 2- Students will analyze the electrical machines. 3- Students will solve the problems related with the electrical machines
Textbook of the course	A.E. Fitzgerald, C. Kingsley and A. Kusko, Electric Machinery, McGraw-Hill.
Other reference books	M. Kostenko and L. Piotrovsky, Electrical Machines. O.I. Elgerd, Basic Electric Power Engineering. Hindmarsh, Electrical Machines and Their Applications.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Basic concepts of dc, induction and synchronous machines
2	Expression of voltages generated on dc and ac generators
3	DC generators
4	DC motors
5	Speed control of dc motors
6	Constructional features and operational principles of induction machines
7	Derivation of equivalent circuit of induction machines
8	Midterm
9	Midterm
10	Analysis of induction motors
11	Starting and speed control methods of induction motors
12	Calculation of parameters in the equivalent circuit of synchronous machines
13	Regulation and efficiency in the synchronous machines
14	Special electrical machines
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**x**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering		**x**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**x**		
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. M. Bilginer Gülmezoğlu

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228523 **COURSE TITLE:** High Voltage Techniques

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	45	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	55			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Introduction to high voltage engineering, conduction and breakdown in gases, conduction and breakdown in liquid dielectrics, breakdown in solid dielectrics, corona discharges, applications of insulating materials, generations of high voltages and currents, measurements of high voltages and currents, overvoltage phenomenon and insulation coordination in power systems, non-destructive testing of materials and electrical apparatus, high voltage testing of electrical apparatus, design, planning and layout of high voltage laboratories.
Objectives of the course	Students will apply the knowledge of mathematics, science, electrical fields and power engineering. They will learn the general breakdown theory of solid, liquid and gas insulations. Understand the corona and problems associated with the corona discharges. They will also learn principles of high-voltage test generation methods and test procedures. Also learn about lightning and switching phenomena in power system. They will be educated about safety when working with high voltage.
Contribution of the course towards professional education	Students who learn the fundamentals high voltage engineering and understand the techniques used in high voltage testing and measurements can work in the related projects and can be a part of design and development team. This course also provides strong background for graduate level courses.
Outcomes of the course	1) Learn the application of mathematics, physics, and electric field theory in the electric power system field. 2) Learn the breakdown mechanism of gaseous insulators. 3) Learn the problems caused by the corona in lines. 4) Learn the topology and the basic operating principles of high voltage generators. Also, learn the high voltage measurement techniques. 5) Understand the lighting phenomenon and its adverse effects and learn the ways of protection against lightning. 6) Learn the type of protection devices and their characteristics.
Textbook of the course	M.S. Naidu and V. Kamaraju, High Voltage Engineering, second edition, NY: McGraw-Hill, 1999.
Other reference books	1) E. Kuffel, W. S. Zaengl, High Voltage Engineering Fundamentals, Elsevier Science & Technology Books, 1999. 2) T. J. Gallagher and A. J. Pearmain, High Voltage Measurement, Testing and Design, NY: Wiley, 1983. 3) L. L. Alston, High Voltage Technology, Oxford University Press, 1968.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to high voltage techniques
2	Conduction and breakdown of gaseous insulators
3	Corona
4	Conduction and breakdown of liquid and solid insulators
5	Applications of Insulating Materials
6	DC and AC high voltage generators
7	Impulse generators
8,9	Midterm
10	Measurement of High Voltages and Currents
11	Overvoltage Phenomenon, lightning and protection methods against lightning
12	Insulation Coordination in Electric Power Systems
13	Non-Destructive Testing of Materials and Electrical Apparatus
14	High Voltage Testing of Electrical Apparatus and Planning of high voltage laborites
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**x**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**x**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1: None**

Name of Instructor(s): Assoc. Prof. Bünyamin Tamyürek

Signature(s):

Date: 22.03.2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228402 **COURSE TITLE:**Inner Electrical Installation Application

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
8	3	-	3		Compulsory (x) Elective ( )	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
1	2 ( )	-	-

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
	Type	**Number**	**%**	**Activity Type**	**Number**	**%**
Midterm	Midterm	1	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	50			
Makeup exam (Oral/Written)	Oral					

Prerequisites	Mathematics I, Mathematics II
Brief content of the course	Purpose of illumination, illumination types, Light and eye sight, Photometric quantities, some important photometric laws, Fundamentals of production of light, Light sources, Calculation of illumination for places of inside of a building, Inner electric installation, Some protection methods for electric shocks. Preparation of illumination and inner installation project for a building.
Objectives of the course	Some important knowledge about lighting and preparation of inner installation project for buildings are given.
Contribution of the course towards professional education	A student who learnt the subjects given in this course can do the application of inner installation that is described in the project of the building.
Outcomes of the course	A student who learnt the subjects given in this course can design the illumination and inner installation project for a given building.
Textbook of the course	Aydınlatma Tekniği (Turkish) Prof. Dr. Muzaffer Özkaya, Bursa Üniversitesi Basımevi, 1981
Other reference books	***LIGHTING FUNDAMENTALS*** LIGHTING UPGRADE MANUAL US EPA Office of Air and Radiation 6202J EPA 430-B-95-003, January 1995 **http://www-is.informatik.uni-oldenburg.de/~dibo/teaching/mm/pages/light-fundamentals.html#selc**
Required material for the course	-

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	The purpose of illumination, Illumination types, Physiologic illumination , Decorative illumination
2	Definition of light, Eye sight, Spectral susceptibility of eye
3	Some photometric quantities, Flux of light, Quantity of light, Intensity of light, Illumination level, Photometric radiance, Luminance.
4	Some important photometric laws, Cosine law, Lambert law, Law for projection of three dimensional angle etc.
5	Application of those photometric laws, Example problem solutions.
6	Fundamentals of light production, Thermal way of light production, Magnetic (Luminescent) way of light production
7	Sources of light, Incandescent lamp, Fluorescent lamp, High pressure discharge lamp
8	Midterm
9	Midterm
10	Illumination devices, Classification of illumination devices
11	Illumination calculation for inner places, Illumination calculation depending upon efficiency
12	Some important parts Inner electric installation
13	Voltage drop calculation, Selection of cross sectional area of wire used in electric installation
14	Preparation of inner installation project.
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**X**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**X**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.			**X**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227522 **COURSE TITLE:** INTRODUCTION TO IMAGE PROCESSING

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	0	3		Compulsory ( ) Elective (√)	Turkish ( ) English (√)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz			Lab performance		
	Homework	5	25	Report		
	Project	1	20	Oral exam		
	Other (……)			Other (……)		
Final		1	25			
Makeup exam (Oral/Written)						

Prerequisites	SYSTEMS AND SIGNALS
Brief content of the course	Components of an image processing system and its applications, Low level image processing, Image histograms and gray level transformation, Spatial filters, Color Spaces, Image enhancement,Image morphology, Edge detection, Segmentation, Introduction to computer vision
Objectives of the course	1. To introduce students basic principles of two dimensional digital signal processing and the application of these principles to images 2. To provide students the mathematical background of image processing 3. To introduce students implementation methods that adress common problems in image processing 4. To encourage students formulate real life image processing applications and implement solutions
Contribution of the course towards professional education	1. To introduce students basic principles of two dimensional digital signal processing and the application of these principles to images 2. To provide students the mathematical background of image processing 3. To introduce students implementation methods that adress common problems in image processing 4. To encourage students formulate real life image processing applications and implement solutions
Outcomes of the course	1. Learning the theoretical background for digital image processing. 2. Implementing basic image manipulation and analysis techniques. 3. Recognizing solution methods to basic image processing problems.
Textbook of the course	**Rafael C. Gonzalez and Richard E. Woods, "Digital Image Processing", Third Ed., Prentice-Hall, 2008.**
Other reference books	**R.C. Gonzalez, R.E. Woods, S.L. Eddins, "Digital Image Processing using MATLAB", Prentice-Hall, 2004.** **W. Pratt, Digital Image Processing, 3rd edition, John Wiley & Sons, 2001**
Required material for the course	MATLAB, MATLAB Image Processing Toolbox

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction, basic concepts, image processing applications
2	Representation formats of images, scaling, translation and rotation of images, sums and differences
3	Contrast and grey levels, histograms, intensity transforms, equalization
4	Spatial filtering, convolution, simple filters, Gaussian and other non-linear filters, image enhancement
5	Filtering in the frequency domain, power spectral density, the FFT, noise removal
6	Color basics, color spaces
7	Image morphology, morphological operations, dilation, erosion, opening, closing
8	Midterm
9	Midterm
10	Image morphology, extraction of connected components, convex hull, contour extraction
11	Thresholding, clustering, segmentation, edge detection
12	Region based segmentation, region growing
13	Introduction to computer vision, shape analysis, extraction of shape-based features
14	Introduction to computer vision, texture analysis, extraction of texture-based features
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**x**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**x**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.	**x**			
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Yrd. Doç. Dr. Helin Dutağacı

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227455 **COURSE TITLE:** Introduction to Power Electronics

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	45	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	55			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Background information about power electronics technology, organizing and analyzing semiconductor switches, uncontrolled diode rectifiers, phase controlled rectifiers, ac controllers, dc/dc converters, inverters, and discontinuous operating modes.
Objectives of the course	Having taken this course, students will learn the need for electrical conversion, and learn the goal and methods of electrical conversion. At the end of the course, students become effective designers of useful power converters.
Contribution of the course towards professional education	Work and take part in power electronic design projects. Provide important background for graduate level studies.
Outcomes of the course	7) Learn about the basics of the power semiconductor devices 8) Learn about the topology and the operating principles of various ac/dc rectifier circuits 9) Learn about the topology and the operating principles of various dc/dc converters. 10) Learn about the topology and the operating principles of various dc/ac converters.
Textbook of the course	Mohan, N., T. Undeland, ve W. Robbins, "Power Electronics: Converters, Applications, and Design," John Wiley, ISBN: 0471584088.
Other reference books	1) Krein, P. T., "Elements of Power Electronics," Oxford University Press, 1998, ISBN: 0195117018. 2) Erickson, R. W., "Fundamentals of Power Electronics," Chapman & Hall, 1997, ISBN: 0412085410. 3) Rashid, M. H., "SPICE for Power Electronics and Electric Power. Upper Saddle River," Prentice-Hall, 1993, ISBN: 0130304204. 4) J. G. Kassakian, M. F. Schlecht, ve G. C. Verghese, "Principles of Power Electronics. Reading, Addison-Wesley, 1991, ISBN: 0201096897.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to power electronics technology
2	Power semiconductors: diodes and thyristors
3	Power semiconductors: BJT, MOSFET, GTO and IGBT
4	Uncontrolled diode rectifiers
5	Thyristor controlled rectifiers
6	Buck converter
7	Boost converter
8,9	Midterm
10	Buck-boost converter
11	Cuk and Sepic converters
12	Half-bridge and full-bridge dc/dc converters
13	Half-bridge and full-bridge inverters
14	Discontinues current mode of operation
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**x**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**x**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1: None**

Name of Instructor(s): Assoc. Prof. Bünyamin Tamyürek

Signature(s):

Date: 22.03.2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228516 **COURSE TITLE:** Power Electronics Applications

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
8	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	3 ( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	45	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	55			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Switching power supplies, zero-current and zero-voltage switching, resonance converters, gate drive circuits, snubber circuits, heat sink calculations, ac motor drives, uninterruptible power supplies, power system applications.
Objectives of the course	Having taken this course, students will learn the need for electrical conversion, and learn the goal and methods of electrical conversion. At the end of the course, students become effective designers of useful converters.
Contribution of the course towards professional education	Work and take part in power electronic design projects. Provide important background for graduate level studies.
Outcomes of the course	11) Learn the topology, the operating principles and the design of various switching mode power supplies. 12) Learn the gate drive topologies, protection mechanisms of power devices. 13) Learn about the various industrial and commercial applications of the power electronics technology.
Textbook of the course	Mohan, N., T. Undeland, ve W. Robbins, "Power Electronics: Converters, Applications, and Design," John Wiley, ISBN: 0471584088.
Other reference books	5) Krein, P. T., "Elements of Power Electronics," Oxford University Press, 1998, ISBN: 0195117018. 6) Erickson, R. W., "Fundamentals of Power Electronics," Chapman & Hall, 1997, ISBN: 0412085410. 7) Rashid, M. H., "SPICE for Power Electronics and Electric Power. Upper Saddle River," Prentice-Hall, 1993, ISBN: 0130304204. 8) J. G. Kassakian, M. F. Schlecht, ve G. C. Verghese, "Principles of Power Electronics. Reading, Addison-Wesley, 1991, ISBN: 0201096897.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Review of half-bridge and full-bridge inverters
2	Three-phase inverters
3	Switching power supplies: Forward converter
4	Switching power supplies: Flyback converter
5	Switching power supplies: Half-bridge and full-bridge
6	Resonance converters
7	Zero-voltage and zero-current switching
8,9	Midterm
10	Gate drive circuits, snubbers, and heat sink calculations
11	DC motor drives
12	AC motor drives
13	UPS and photovoltaic applications
14	Energy storage applications
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**x**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**x**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1: None**

Name of Instructor(s): Assoc. Prof. Bünyamin Tamyürek

Signature(s):

Date: 22.03.2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227457 **COURSE TITLE:** Power System Analysis I

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	3 ( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	45	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	55			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Introduction to power system analysis, review of phasors, instantaneous power, complex power, and elementary aspects of balanced three-phase circuits, power transformers, transmission line parameters, steady state operation of transmission lines, symmetrical components.
Objectives of the course	This course will help the students to understand the theory and the techniques involved in the modeling and analysis of power system components and networks. Moreover, they will learn how such modeling and analysis is used in the design and planning of power systems.
Contribution of the course towards professional education	Students who learn the essential elements of electric power system and understand the specifications required for the design and planning of electrical power network can work in the projects related to the power system area. This course also provides strong background for graduate-level power system courses.
Outcomes of the course	1) Learn the analysis of balanced three-phase circuits. 2) Learn the modeling and analysis of power transformers. 3) Learn the transmission line parameters. 4) Learn the modeling and the analysis of the transmission lines. 5) Perform the transmissions line voltage regulation and the loadability analysis. 6) Apply the line compensation techniques. 7) Learn symmetrical component methods and analyze the unbalanced three-phase systems.
Textbook of the course	J. D. Glover, M. S. Sarma "Power System analysis and Design," Brooks/Cole publishing, 5th Edition, 2010.
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to power system analysis
2	Phasors, instantaneous power in single and three-phase systems, complex power
3	Balanced three-phase circuits
4	Equivalent circuit of practical transformers and per-unit systems
5	Power transformers
6	Transmission line parameters
7	Medium and short transmission lines
8,9	Midterm
10	Transmission line differential equations and equivalent π circuit
11	Lossless lines and maximum power flow
12	Line loadability
13	Reactive compensation techniques
14	Symmetrical components
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**x**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**x**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1: None**

Name of Instructor(s): Assoc. Prof. Bünyamin Tamyürek

Signature(s):

Date: 22.03.2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228492 **COURSE TITLE:** Power System Analysis II

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
8	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	3 ( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	45	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	55			
Makeup exam (Oral/Written)	Written					

Prerequisites	None
Brief content of the course	Power flow analysis, symmetrical faults, symmetrical components, analysis of unsymmetrical faults, protection systems, power system controls, transient stability.
Objectives of the course	This course will give students the ability to develop appropriate models for an interconnected power system, and know how to perform power flow, economic dispatch and short circuit analysis. Students should also be able to write a basic power flow computer program. Course also provides students with a complete overview of interconnected power system operation.
Contribution of the course towards professional education	Students who learn the essential elements of electric power system and understand the specifications required for the design and planning of electrical power network can work in the projects that are related to power system area. This course also provides strong background for graduate-level power system courses.
Outcomes of the course	1) Learn the methods of power flow analysis of balanced three-phase systems. 2) Learn the modeling and analysis of symmetrical faults. 3) Learn the symmetrical components methods and the analysis of unbalanced three-phase systems. 4) Learn the modeling and the analysis of various unsymmetrical faults. 5) Learn the elements of power control in electric power system. 6) Perform transient stability analysis of a given system under sudden disturbances and faults.
Textbook of the course	J. D. Glover, M. S. Sarma "Power System analysis and Design," Brooks/Cole publishing, 5th edition, 2010.
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Review of prior knowledge about electric power system analysis
2	Power-flow problem – introduction and important definitions
3	Power-flow problem by Gauss-Siedel
4	Power-flow problem by Newton-Raphson
5	Control of power flow
6	Symmetrical faults
7	Symmetrical components
8,9	Midterm
10	Unsymmetrical faults – part 1
11	Unsymmetrical faults – part 2
12	Circuit breakers and fuse selection
13	Transient stability
14	Protection in power system
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**x**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**x**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1: None**

Name of Instructor(s): Assoc. Prof. Bünyamin Tamyürek

Signature(s):

Date: 22.03.2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227451 **COURSE TITLE:** Semiconductor Devices

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	3 ( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	60	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final	Written	1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	Electronics I
Brief content of the course	Semiconducting materials, crystal structure in solids, quantum mechanics, intrinsic semiconductor, doped semiconductor, carrier densities under thermal equilibrium, drift and diffusion currents, continuity equation, currents in a PN junction, BJT structure and currents, MOS structure, MOSFET structure, Optical devices.
Objectives of the course	Providing the background for the transistors and integrated circuits, Better knowledge on the selection and use of semiconductor devices, Awareness on the limitations of transistors,
Contribution of the course towards professional education	Knowledge inner workings of the semiconductor devices that are used as switches or amplifiers Confidence in selecting semiconductor devices in circuit design.
Outcomes of the course	Students who complete this course successfully will understand the operation principles and limitations of the semiconductor devices. They will be able to calculate the current gain of a bipolar transistor for a given structure and bias condition.
Textbook of the course	D. A. Neamen, *Semiconductor Physics and Devices*, Irwin, 1992
Other reference books	1. Sze, *Physics of Semiconductor Devices* Wiley, 2006 2. Streetman, *Solid State Electronic Devices*, Prentice Hall, 1997
Required material for the course	An electronic calculator will be used in exams.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction: Semiconductor materials
2	Crystal structure of solids
3	Quantum Mechanics and Energy bands
4	Carriers and densities
5	Drift and diffusion currents; continuity equation
6	PN junction
7	PN junction currents
8	Midterm
9	Midterm
10	BJT structure
11	MOS structure
12	MOSFET
13	LED, Laser, Solar Cells
14	Course Review
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**x**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.		**x**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering			**x**	
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Hasan Hüseyin Erkaya

Signature(s):

Date: March 11, 2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227006 **COURSE TITLE:** NETWORK APPLICATIONS

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
0	3 (x)	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	40	Quiz		
	Quiz	3	20	Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	written					

Prerequisites	None
Brief content of the course	CCNA Exploration Network Fundamentals
Objectives of the course	CCNA Exploration teaches networking based on technology, covering networking concepts using a top-down, theoretical, and integrated approach – from network applications to the network protocols and services provided to those applications by the lower layers of the network. CCNA Exploration includes the following features: • Students learn the basics of routing, switching, and advanced technologies to prepare for Cisco CCNA certification and entry level networking careers • The curriculum discusses networking concepts in depth and uses language that allows for integration with engineering concepts, providing a deep, theoretical understanding of networking concepts for experienced learners with advanced problem solving and analytical skills. • Courses emphasize critical thinking, problem solving, collaboration, and the practical application of skills .
Contribution of the course towards professional education	• Provides students with the skills needed to succeed in networking-related degree programs
Outcomes of the course	1. Students learn basics of networks 2. Build knowledge base for advanced network applications 3. Build self-confidence for high technology digital systems
Textbook of the course	CCNA Study Guide Books
Other reference books	Other CCNA books
Required material for the course	Computer

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Living in a Network Centric World
2	Communicating over the Network
3	Application Layer Functionality and Protocols
4	OSI Transport Layer
5	OSI Network Layer
6	Addressing the Network – IPv4
7	OSI Data Link Layer
8	Midterm
9	Midterm
10	OSI Physical Layer
11	Ethernet
12	Planning and Cabling Networks
13	Configuring and Testing Your Network
14	Trouble Shooting Network Fails
15,16	Final exam

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.		**x**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems			**x**	
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.			**x**	
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Serkan Uğurluoğlu

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227520 **COURSE TITLE:** VEHICLE CONTROL SYSTEMS

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	0	3	5	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm			Quiz		
	Quiz			Lab performance		
	Homework	**5**	**30**	Report		
	Project	**1**	**30**	Oral exam		
	Other (……)			Other (……)		
Final		**1**	**40**			
Makeup exam (Oral/Written)						

Prerequisites	A priori knowledge of MATLAB/Simulink is recommended. Otherwise, students could practise this program from www.engin.umich.edu/group/ctm
Brief content of the course	Review of system dynamics and control. Vehicle dynamics modeling. Vehicle dynamics control. Road and driver models. Engine modeling and control. Modeling and control of powertrain systems. Other in-vehicle electronic control systems. Communication protocols. Hardware-in-the-Loop simulations.
Objectives of the course	The automotive industry has made an increasing use of closed loop control technology for better performance, comfort and safety in the products in the last years. After a review on system dynamics and control theory, the students can get detailed information on, 1. tire motion control applications like ABS and ASR, 2. lateral motion control applications of the vehicle body like ESP and vertical motion control applications of the vehicle body like active (and semi-active) suspension systems 3. warning and/or control system applications based on sensing and fusing environmental data like active distance control and heading control, 4. engine and powertrain control applications like idle speed control, anti-knocking control, lambda control, gearbox control 5. parts and devices for control, communication protocols and hardware-in-the-loop simulations.
Contribution of the course towards professional education	
Outcomes of the course	1. Understanding control problems in road vehicles, getting thorough information on solution techniques. 2. Getting detailed information on the state-of-the-art technology of control applications in road vehicles 3. Being to be able to make models of automotive subsystems with system dynamics theory, building control systems for these subsystems and performing computer aided analyses for these systems with e.g. MATLAB/Simulink and/or ADAMS/Car. 4. Being able to make detailed literature surveys on automotive control applications, making scientific contributions to selected publications in the form applying own control techniques and publish these new achievements to the scientific community
Textbook of the course	1. Kiencke, U. ve Nielsen, L. (2000). Automotive Control Systems for Engine, Driveline and Vehicle. Springer-Verlag (SAE). Berlin.
Other reference books	1. Li, L. ve Wang, F.Y. (2007). Advanced Motion Control and Sensing for Intelligent Vehicles. Springer.

	2. Bonnick, A.W.M. (2001). Automotive Computer Controlled Systems. Butterworth Heinemann. 3. Rajamani, R. (2006). Vehicle Dynamics and Control. Springer. 4. Guglielmino, E., Sireteanu, T., Stammers, C.W., Ghita, G. ve Giuclea, M. (2008). Semi-active Suspension Control. Springer. 5. Ribbens, W.B. (1998) - Understanding Automotive Electronics. Newnes. 6. Gillespie, T. D., (1992) Fundamentals of Vehicle Dynamics, SAE. 7. Marek et. al. (2003) Sensors for Automotive Technology. Wiley VCH. 8. Harrison, M. (2004) Vehicle refinement - Controlling Noise and Vibration in Road Vehicles. SAE International. 9. Denton, T. (2006) Advanced Automotive Fault Diagnosis. Elsevier Butterworth Heinemann. 10. Fijalkowski, B.T. (2011) Automotive Mechatronics, Operational and Practical Issues, Volume 1 & 2, Springer. 11. Dorf, R.C. and Bishop, R.H., (1995) Modern Control Systems, Addison-Wesley Publishing Company. 12. Jazar, R., N., (2008) Vehicle Dynamics, Springer. 13. Rill, G., (2003) Vehicle Dynamics Lecture Notes, Fachhochschule Regensburg
Required material for the course	MATLAB/Simulink

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Review of system dynamics and control
2	Introduction to road vehicle modeling. Coordinate systems. Tire models.
3	Modeling of road vehicle longitudinal dynamics
4	Antilock braking systems. Control algorithms.
5	Antiskid systems. Control algorithms.
6	Modeling of vehicle lateral dynamics. Yaw stabilization.
7	Modeling of vehicle lateral dynamics. Anti-roll(over) systems.
8	Automatic control systems of vehicle longitudinal dynamics (e.g. adaptive cruise control). Automatic control systems of vehicle lateral dynamics (e.g. heading control). Road and driver models.
9	Modeling of vehicle vertical dynamics. Suspension systems. Modeling of suspension systems.
10	Active and semi-active suspensions. Control algorithms
11	Engine modeling. Engine control systems. Engine control applications.
12	Modeling of powertrain elements. Controlling drivetrains.
13	Intelligent Transportation Systems. Accident-free and sustainable transportation.
14	Electronic control devices. Protocols. Hardware-in-the-loop (HIL) simulations..
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**x**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.	**x**			

5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low**

1:None

Name of Instructor(s): Hasan Şahin

Signature(s):

Date: 26/03/2012

ESOGU ELECTRICAL - ELECTRONICS ENGINEERING DEPARTMENT

TECHNICAL ELECTIVES (3+2)

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 15128544 **COURSE TITLE:** DSP SYSTEM DESIGN

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
8	3	2	4	7	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	20	Quiz		
	Quiz	3	10	Lab performance		
	Homework			Report		
	Project	1	10	Oral exam		
	Other (……)	6	30	Other (……)		
Final		1	30			
Makeup exam (Oral/Written)						

Prerequisites	Systems and Signals, Introduction to Microcomputers
Brief content of the course	Real-Time DSP Processing, DSP Processors, Program Development Tool and DSK, Input and Outputs, Interrupts, ADC, Multichannel Serial Port and Analog Input and Output, Numerical Representations, DSP Fundamentals, FIR and Circular Buffers, IIR Filters, Frame Processing and FTT.
Objectives of the course	The aim of the course is to teach use of DSP hardware and software in DSP applications.
Contribution of the course towards professional education	The student knows the DSP hardware and software and uses them in DSP applications efficiently.
Outcomes of the course	Students: 1. recognize the DSP architecture. 2. know fixed- and floating point number representations, and overflow handling. 3. use DSP hardware and software in DSP applications. 4. can design and implement digital filter with desired characteristics. know how to apply FFT for spectrum analysis.
Textbook of the course	1. Dale Grover, John Deller, Digital signal processing and the microcontroller, Grover, Prentice Hall, 2015. 2. Rulph Chassaing, Digital Signal Processing and Applications with C6713 and C6416 DSK, John Willey and Sons, Inc., 2005
Other reference books	Steven A. Tretter, "Communication system design using DSP algorithms: with laboratory experiments for the TMS320C6700", Kluwer Academic Publishers, March 2003.
Required material for the course	Texas Instruments DSK, Code Compser Studio IDE

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to Real-Time DSP Processing
2	Architecture of DSP Processors
3	Program Development Tools and DSK
4	Input and Outputs
5	Interrupts and Timers
6	Analog Digital Converter (ADC), Multichannel Serial Port and AIC23B
7	DSP Fundamentals
8	Midterm
9	Midterm
10	Numerical Representations and Arithmetic
11	Circular Buffers and FIR Filters
12	IIR Filters
13	Frame Processing and FFT
14	Other DSP Applications
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.		**X**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**X**		
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227637 **COURSE TITLE:** LINEAR CONTROL SYSTEMS

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	2	4	7	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	35	Quiz		
	Quiz	3	15	Lab performance	7	50
	Homework	7	10	Report	7	50
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Written					

Prerequisites	Fundamentals of Control Systems
Brief content of the course	Controller design using root locus and frequency response approaches. Lag, lead, lag-lead compensators, PI, PD ve PID controllers. State space analysis of control systems. Controllability and observability. Controller design by state space approach. State feedback controller. Observer.
Objectives of the course	Designing appropriate controller and/or observer such that the feedback control system satisfies desired response.
Contribution of the course towards professional education	In this course students design and implement several controllers and observers to satisfy given conditions. With this respect, students become ready to solve engineering problems that they will face during their career.
Outcomes of the course	Students completing this course successfuly 1) gain knowledge on design concept 2) have experience on desgin with different approaches 1) learn how and in what capacity a system's requirements can be satisfied.
Textbook of the course	Ogata, K., Modern Control Engineering, Prentice Hall, Inc., 4th Ed. 2001
Other reference books	Dorf, A., Modern Control Systems, Addison Wesley, 9th Ed., 2001. Nise, B., Control Systems Engineering, John Wiley, 3rd Ed., 2000
Required material for the course	MATLAB program

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Design criteria of control systems in time and frequency domains. Overshoot, settling time, steady-state error, phase and gain margins.
2	Root locus design of lag and lead compensators.
3	Root locus design of lag-lead compensator,. PI, PD, and PID controllers.
4	Compensator and controller design using Bode diagrams.
5	Minor-loop controller design
6	Steady-state representation of dynamic systems
7	Canonic representations
8	Midterm
9	Midterm
10	Analysis od dynamic systems in state space
11	Controllability and observability
12	Controller and observer design.
13	Observer-based controller design
14	Linear quadratic controler
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.	**x**			
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering		**x**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High 3: Medium 2: Low 1:None

Name of Instructor(s): Y. Doç. Dr. Metin Özkan

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227635 **COURSE TITLE:** Communication Electronics

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	2	4	7	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
0	4 ( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	1	30	Quiz		
	Quiz			Lab performance	10	30
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Oral					

Prerequisites	151226322 Electronics II, 151226357 Electronics Laboratory
Brief content of the course	Introduction to communications electronics, amplitude modulation-frequency modulation theories and circuits, radio transmitters, power amplifiers, typical receiver circuits, transceivers, frequency synthesizers, multiplexing (FDM, TDM, PCM), antenna fundamentals, satellite communication, television and telephony system fundamentals
Objectives of the course	To introduce the principles of electronic communication and to introduce some basic communication electronics circuits.
Contribution of the course towards professional education	Students will learn some principle methods of analog communication and they will also get familiar with some communication electronics circuits.
Outcomes of the course	1) Introduce some basic communication electronics circuits 2) Construct a communication system in terms of blocks of communication circuits. 3) Learn basics of communication tools such as radio, television and telephony system.
Textbook of the course	Louis E. Frenzel, Communication Electronics: Principles and Applications, McGraw Hill, 2001.
Other reference books	Forrest Barker, Communication Electronics Systems, Circuits and Devices, Prentice Hall, 1987.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Communication electronics - introduction
2	Amplitude modulation, single-sideband modulation (Experiment-1 : Oscillator circuits)
3	Amplitude modulation circuits (Experiment-2 : AM and FM (Theory))
4	Frequency modulation (Experiment-3 : AM Generation and Detection circuits)
5	Frequency modulator-demodulator and phase modulator circuits (Experiment-4 : FM Generation and Detection circuits)
6	Radio transmitters, power amplifiers, impedance-matching networks (Experiment-5 : Phase Locked Loop (PLL) Circuits)
7	Superheterodyne receiver, intermediate frequency circuits, noise (Experiment-6 : IF Filter Design)
8	Midterm
9	Midterm
10	Typical receiver circuits, transceivers and frequency synthesizers (Experiment-7 : Mixer circuits)
11	Multiplexing: frequency division multiplexing, time-division multiplexing (Lab: project subject assignments)
12	Pulse code modulation, antenna fundamentals (Lab: project progress report)
13	Satellite communication, TV signal, cable, satellite and digital television (Lab: project presentations-group1)
14	Telephone, fax and GSM communication (Lab: project presentations-group2)
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.		**X**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering	**X**			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Yrd. Doç. Dr. H. Serhan Yavuz

Signature(s): **Date:** March 10, 2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228545 **COURSE TITLE:** FUZZY LOGIC

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
8	3	2	4	7	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
0	4 ( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	30	Quiz		
	Quiz			Lab performance	10	30
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	oral					

Prerequisites	none
Brief content of the course	Classical sets and fuzzy sets, classical and fuzzy relations, membership functions, crisp-to-fuzzy and fuzzy-to-crisp conversions, fuzzy arithmetic, extension rule, fuzzy rule based systems, fuzzy decision making, fuzzy classification.
Objectives of the course	To introduce the fuzzy logic concept, to teach the principles of fuzzy logic and to make the students gain the ability of modeling and interpreting sophisticated systems by using fuzzy logic aspects.
Contribution of the course towards professional education	Students will get familiar with the concept of fuzzy logic and they will use their knowledge in designing a fuzzy logic application or in understanding a fuzzy logic system.
Outcomes of the course	1) To learn the principle information about fuzzy logic 2) To gain enough information to analyze a predesigned fuzzy system. 3) To be able to make basic designs (including determination of membership functions, construction of fuzzy rule-based systems and usage of crisp values in terms of fuzzy by making fuzzification and/or usage of fuzzy values in terms of crisp by making defuzzification) by using fuzzy logic
Textbook of the course	Timothy J. Ross, Fuzzy Logic With Engineering Applications, Wiley, 2010.
Other reference books	1) J.R. Jang, C.Sun, Neuro-Fuzzy and Soft Computing, Prentice Hall, 1997 2) G.J. Klir, B. Yuan, Fuzzy Sets and Fuzzy Logic Theory and Applications, Prentice Hall, 1995
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Fuzzy logic – introduction (Lab: MATLAB – introduction)
2	Classical sets, fuzzy sets (Lab: Fuzzy set operations (complement, union, intersection)
3	Classical relations, fuzzy relations (Lab: Classical Cartesian product, fuzzy Cartesian product)
4	Discrete and continuous membership functions (Lab: Classical and fuzzy relations and compositions)
5	Membership function generation methods (Lab: Membership functions)
6	Fuzzy-to-crisp conversions (Lab: Fuzzification and defuzzification methods)
7	Fuzzy arithmetic, fuzzy numbers (Lab: Fuzzy arithmetic examples)
8	Midterm
9	Midterm
10	Fuzzy extension principle (Lab: Fuzzy extension problems)
11	Comparisons of classical sets and fuzzy sets (Lab: MATLAB fuzzy logic toolbox)
12	Fuzzy rule based systems (Lab: Fuzzy inference systems)
13	Mamdani and Sugeno fuzzy inference systems (Lab: Mamdani FIS and Sugeno FIS examples)
14	Fuzzy decision making, fuzzy classification (Lab: Fuzzy clustering examples)
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**X**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**X**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.		**X**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Yrd. Doç. Dr. H. Serhan Yavuz

Signature(s): **Date:** March 10, 2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227636 **COURSE TITLE:** DIGITAL COMMUNICATIONS

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
7	3	2	4	7	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	4 ( )		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm	1	30	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (Lab)	10	25	Other (……)		
Final			45			
Makeup exam (Oral/Written)	written					

Prerequisites	Signals and Systems, Communications
Brief content of the course	Modulations techniques in digital communication, ASK, FSK, PSK, QAM, waveform coding, PCM, DPCM, Delta-M, orthogonalization, MAP/ML decision criterion, channel coding error correcting techniques, parity, LRC, Hamming codes, polynomial coding, cyclic coding, convolutional coding and Viterbi algorithm, serial communication principles, bit synchronization, bit interleaving, examples in VHDL.
Objectives of the course	Learn the methods/techniques, problems and solutions and what is involved in digital communication.
Contribution of the course towards professional education	Students who choose to continue their carrier in communication will get to know the theoretical and some practical details of the subject. It is advised that a basic electronic communication course is completed before this course.
Outcomes of the course	1. Students learn basic digital communication systems 2. Make introduction to design of digital communication systems 3. Build knowledge base for advanced digital communication systems
Textbook of the course	B. Sklar, Digital Communications, Fundamentals and Applications, Prentice Hall, 2000
Other reference books	1) M.B. Pursley, Introduction to Digital Communications, Pearson-Prentica Hall, 2005. 2) V.A. Pedroni, Circuit Design with VHDL, MIT, 2004.
Required material for the course	Experiments are done in an equipped laboratory. Course also has an in-class experiment performed with all students. This experiment requires a computer with required software installed, 2 FPGA development kits, an oscilloscope and a spectrum analyzer. In addition, students need access to a computer with simulation software for take-home experiments.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Recall of modulation techniques used in digital communications; ASK, PSK, FSK, QAM Use of the FFT function of the oscilloscope for spectrum analysis, spectrum of random-binary-stream
2	Waveform coding, PCM, DPCM, Delta-Modulation, PWM ASK modulation/demodulation and spectrum analysis
3	Orthogonal signal sets, Gram-Schmidt orthogonalization FSK modulation/demodulation and spectrum analysis
4	Channel capacity, introduction to channel coding. PSK modulation/demodulation and spectrum analysis
5	Block coding, Hamming codes. PWM, RZ, Manchester coding
6	Error detection, parity bit, LRC. QPSK modulation/demodulation
7	General FEC, polynomial codes. Time Division Multiplexing
8,9	Midterm
10	Cyclic codes. Generation of ASK and PSK signals in MATLAB-simulink
11	Convolutional coding and Viterbi algorithm. Generation of QPSK signals in simulink
12	Principles in serial communication, jitter, 8B10B. Serial transmission of analog signals using ADC-serializer-deserializer-DAC
13	Bit synchronization, frame synchronization. Distortion/noise over transmission lines
14	Interleaving, communication example using VHDL/FPGA. Completion of missing experiments
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering			**x**	
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.			**x**	
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.		**x**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering		**x**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

3: Very high **2: Medium** **1: None**

Name of Instructor(s): Yrd. Doç. Dr. Erol Seke

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228546 **COURSE TITLE:** DIGITAL CONTROL SYSTEMS

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
8	3	2	4	7	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
0	4 (x)	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	30	Quiz		
	Quiz			Lab performance	8	15
	Homework	5	10	Report	8	10
	Project			Oral exam		
	Other (……)			Other (……)		
Final			35			
Makeup exam (Oral/Written)	written					

Prerequisites	
Brief content of the course	Introduction and definitions. Discrete-time systems and z transform. Sampling and reconstruction. Open-loop discrete-time systems. Closed-loop discrete-time systems. Time response vharacteristics of discrete-time systems. Stability of discrete-time systems. Controller design. Pole placement and state observer design.
Objectives of the course	Analysis of discrete-time systems. Designing controllers for discrete-time systems
Contribution of the course towards professional education	Using a computer as a controller for a dynamic system is very useful for the Professional life of an electrical engineering student.
Outcomes of the course	Students completing this course successfuly 4. Know how to sample analog signals and also know how to reconstruct a signal from the samples. 5. Can analyze discrete-time systems 6. Can design a controller for discrete-time system and observe its effects on the system
Textbook of the course	Charles L. Phillips and H. Troy Nagle, "Digital Control System Analysis and Design," Prentice Hall, 1995, 3rd. Ed.
Other reference books	Chen, Chi-Tsong, Analog and Digital Control System Design, Saunders College Publishing, 1993
Required material for the course	MATLAB program

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction, discrete-time signals, difference equations.
2	Z transform
3	Sampling. Reconstructing a signal from the samples.
4	Open-loop discrete-time systems.
5	Closed-loop discrete-time systems.
6	Relation between continuous and discrete-time systems. Poles and zeros
7	Time response characteristics of discrete-time systems.
8	Midterms
9	Midterms
10	Stability analysis of discrete-time systems.
11	Controller design for discrete-time systems.
12	State-space representation and analysis of discrete-time systems.
13	Pole placement controller and state observer
14	Sample case designs
15,16	Final exam

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering		**x**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Osman Parlaktuna

Signature(s):

Date: 02.03.2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227642 **COURSE TITLE:** INTRODUCTION TO MECHATRONICS

Semester	**Weekly Hours**		**COURSE**			
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**	**Language**
VII	3	2	4	7	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	( )		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm	1	40	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project	1	20	Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)						

Prerequisites	Circuit Analysis, Electronic Circuits, Logic Circuits
Brief content of the course	Studying basics of the mechatronic and measurement systems. Studying theory and applications of the commonly used sensors and actuating instruments
Objectives of the course	Having a theoretical and practical background on mechatronic systems which the industry needs commonly today.
Contribution of the course towards professional education	This course will support and contribute to many electrical and electronics courses by giving mechanical, programming, and measurement aspects. It will do same effect to the mechanical engineering student courses.
Outcomes of the course	Familiarity to the mechatronic sytems in the Industry. Predevelopment of some problem solving abilities on the subject.
Textbook of the course	Introduction to Mechatronics and Measurement Systems, David G. Alciatore, Michael B. Histand
Other reference books	Books on measurement, measurement devices,electrical machineries, sensors, electronic and mechanical elements, PIC mikrocontrollers. User guides and data sheets also help.
Required material for the course	Measurement tools, some electronic circuit elements, sensors, motors, and PIC programmers. Computer Lab. support. also needed.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introducing mechatronic and measurement system terminology
2	Basic electrical relations, circuit elements, and circuit analysis
3	Semiconductor electronics
4	Aproaches to analyzing and characterizing the response of mechatronic and meas. systems
5	Basics of analog signal processing and the design and analysis of operational amplifiers.
6	Basics of digital devices and the use of integrated circuits.
7	Microcontrollers and PIC microcontroller family
8	Midterm
9	Midterm
10	Data acquisitionand how to couple computers to the measurement systems
11	Common sensors in mechatronic systems
12	Common devices used for actuating mechatronic systems
13	Introduction to contol theory and its role in mechatronic system design
14	Overview of mechatronic system control architectures and some case studies
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering	**X**			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	**X**			
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.		**X**		
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227634 **COURSE TITLE:** INTRODUCTION TO VHDL-FPGA

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	2	4	7	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
0	4 (√)	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	30	Quiz		
	Quiz			Lab performance	10	10
	Homework			Report		
	Project	1	20	Oral exam		
	Other (……)			Other (……)		
Final			40			
Makeup exam (Oral/Written)	written					

Prerequisites	
Brief content of the course	Introduction to programmable devices, FPGA structure, design flow using VHDL, use of ISE software, VHDL signal/data types, design and use of components, connections, synchronous design, waveform and VHDL simulation test benches, use of LEDs and switches on the development kit, pitfalls in VHDL, variables, more complicated keywords in VHDL, correct use of arithmetic and logical operators, state-machines, functions and procedures, memory components, communication with external components using examples
Objectives of the course	Learn how to make designs on Field Programmable Gate Arrays using VHDL.
Contribution of the course towards professional education	Students who choose to continue their carrier in advanced circuit will get to know the theoretical and some practical details of one of the highly technical and advanced subject. It is advised that a basic digital circuit design course is completed before this course.
Outcomes of the course	7. Students learn basics of FPGAs and VHDL 8. Make introduction to design of digital systems using VHDL 9. Build knowledge base for advanced VHDL and FPGA based designs 10. Build self-confidence for high technology digital systems
Textbook of the course	V.A. Pedroni, Circuit Design with VHDL, MIT Press
Other reference books	1) M.B. Pursley, Introduction to Digital Communications, Pearson-Prentica Hall, 2005. 2) Open-Core
Required material for the course	Course is highly practical involving both in class and in lab practical designs and experiments. For the lab part, each student/group is provided an FPGA development kit, a computer with VHDL development software installed. Course slides and previous example designs are provided to students.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Internals of FPGA, VHDL, an example introductory application
2	Design flow using ISE, an example run
3	VHDL signal/data types, defining new types, examples of combinatorial circuit designs
4	Synchronous circuits, design of a test bench and use of related software
5	Signal attributes, standard libraries, common pitfalls
6	Variables
7	CASE, WHEN, FOR, GENERATE keywords, GENERIC keyword
8,9	Midterm
10	Logical and arithmetic operators, state-machines, use of memory components, BRAM
11	Functions and procedures
12	Serial communication
13	Presentations of term-projects, discussions and demonstrations
14	Presentations of term-projects, discussions and demonstrations
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.				**x**
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.			**x**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering			**x**	
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			**x**	
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.		**x**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low**

1:None

Name of Instructor(s): Asist. Prof. Erol Seke

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227638 **COURSE TITLE:** MICROCONTROLLERS

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	2	4	7	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
	3 ( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	20	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)		50	Other (……)		
Final		1	30			
Makeup exam (Oral/Written)	Oral					

Prerequisites	Digital Systems I, Digital Systems II, Introduction to Microcomputers
Brief content of the course	Fundamental structures in PIC16F877, Modules in PIC16F877, Programming of PIC16F877 by PIC assembly, MPASM
Objectives of the course	In this class, structure, programming and application of midrange PIC microcontrollers (typically PIC16F877) are given.
Contribution of the course towards professional education	%50 of general average grade comes from the lab in this class. The students, taking this class gains some theoretical and hands on experience about PIC midrange microcontrollers.
Outcomes of the course	A student, who digests the knowledge given in this class and successful in his term project, can analyze and design microcontroller system for specific purposes. Also this student can study and understand higher level microcontrollers (for instance 18 series) by himself
Textbook of the course	PICmicro Mid-Range MCU Family Reference Manual, Microchip Technology Inc. 1997
Other reference books	Auxiliary tools such as example program and projects, data books, manuals can be found in **www.microchip.com** web site.
Required material for the course	Necessary hardware components for each project are bought by the student in that group.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to mid-range PIC microcontrollers, Oscillators, Reset circuit, Necessary examples related with the subjects
2	Architecture, CPU and ALU, Memory organizations, Necessary examples related with the subjects
3	Data EEPROM, Interrupts, I/O ports, Necessary examples related with the subjects
4	PSP (parallel slave port), Timer0, Timer1, PSP (parallel slave port), Timer0, Timer1, Necessary examples related with the subjects
5	Timer2, CCP module, Timer2, CCP module, Necessary examples related with the subjects
6	MSSP module, USART, Necessary examples related with the subjects
7	10-bit ADC module, In circuit serial programming, Necessary examples related with the subjects
8	Midterm
9	Midterm
10	Instruction set, Necessary examples related with the subjects
11	Summary of MPASM, Necessary examples related with the subjects
12	PIC assembler compiler directives, Necessary examples related with the subjects
13	The general structure of MPLAB IDE, Necessary examples related with the subjects
14	Introduction of a sample project (hardware and software)
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**		
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.	**x**			
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering		**x**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				
9	Understanding of professional and ethical responsibility				
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s):

Date:

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228547 **COURSE TITLE:** PLC AUTOMATION SYSTEMS

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
8	3	2	4	7	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
4	(√)		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	25	Quiz		
	Quiz	2	20	Lab performance		
	Homework			Report		
	Project	1	20	Oral exam		
	Other (……)			Other (……)		
Final		1	35			
Makeup exam (Oral/Written)	Written					

Prerequisites	none
Brief content of the course	Introduction to PLC and PLC components. S7-1200 PLC and its features. Input-Output devices. Step-7 TIA Portal software development tool. Software development with LAD and STL. PLC instruction set and applications. Analog input and output. Open- and closed-loop control.
Objectives of the course	The aim of the course is to introduce the architecture of PLCs that are used in various control applications and their fundamental components; and to teach the development of open/closed loop controls using S7-1200 PLCs.
Contribution of the course towards professional education	Students learn the use of PLC and other devices in control systems. They also learn the input/output devices appeared in the PLC-based systems.
Outcomes of the course	A student 1. Knows PLC architecture and its components. 2. Knows the features of sensors and actuators. 3. Can make a project development in LAD and STL. 4. Can develop a control application using S7-1200 PLC.
Textbook of the course	"Automating Manufacturing Systems with PLCs", Hugh Jack, version 5.1, March 21, 2008.
Other reference books	"SIMATIC, S7-1200 Programmable controller, System Manual", Siemens AG, 2012.
Required material for the course	Siemens S7-1200 PLC Siemens HMI Panel

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	What is a PLC? PLC components.
2	Introduction to Siemens S7-1200 PLC.
3	Ladder Logic and Statement List, Scan Cycle.
4	S7-1200 Basic functions: Logic Stack, Boolean Contact instructions.
5	Jump and Subroutine instructions.
6	Timers and Counters.
7	Arithmetic and Data Move functions.
8	Midterm
9	Midterm
10	Special PLC instructions: Shift, Table, Find, and Conversion.
11	High Speed functions: Outputs and Counters.
12	Open Loop and Closed Loop control.
13	Advanced PLC functions.
14	PLC Applications.
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering				**x**
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**x**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**x**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.				**x**
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**x**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**x**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**x**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**x**
9	Understanding of professional and ethical responsibility				**x**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**x**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**x**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s):

Signature(s):

Date: 03/08/2016

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227633 **COURSE TITLE:** MICROWAVE TECHNIQUES

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
7	3	2	4	7	Compulsory ( ) Elective (x)	Turkish ( ) English (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
0	4 ( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	1	25	Quiz		
	Quiz	2	5	Lab performance	1	5
	Homework	2	5	Report	1	10
	Project	1	10	Oral exam		
	Other (……)			Other (……)		
Final			40			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Lumped-element model for transmission lines, analysis of fields in transmission lines, terminated transmission lines, Smith chart, generator and load mismatches, lossy transmission lines, transient analysis in transmission lines, impedance matching techmiques (L networks, single stub and double stub elements, quarter-wave transformators), microwave network analysis, impedance and equivalent voltages and currents, impedance and admittance matrices, scattering matrix, ABCD matrix.
Objectives of the course	Teaching fundamental concepts and different analysis methods for transmission lines, impedance matching techniques and realizing microwave network analysis.
Contribution of the course towards professional education	Providing knowledge and ability on microwave circuits and related engineering applications.
Outcomes of the course	1. Define transmission lines, their fundamental properties and certain analysis methods. 2. Distinguish impedance matching techniques. 3. Realizing microwave network analysis.
Textbook of the course	David M. Pozar, Microwave Engineering, 4th edition, John Wiley and Sons Inc., 2011.
Other reference books	- Robert E. Collin, Field Theory of Guided Waves, 2nd edition, John Wiley and Sons Inc., 1991. - Serkan Şimşek, Cevdet Işık ve Ercan Topuz, Mikrodalga Tekniği: Pasif Devreler ve Çözümlü Problemler, Papatya Yayıncılık, 2. baskı, 2015.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Plane electromagnetic waves. Parallel-plate waveguides. TE, TM and TEM modes.
2	Waveguides with rectangular and circular cross-sections. Coaxial waveguides.
3	Lumped-element circuit model for transmission lines. Analysis of fields in transmission lines.
4	Terminated transmission lines. Smith chart.
5	Generator and load mismatches.
6	Lossy transmission lines.
7	Transient analysis on transmission lines.
8	Midterm
9	Midterm
10	Impedance matching with L networks.
11	Impedance matching with single stub elements.
12	Impedance matching with double stub elements. Quarter-wave transformators.
13	Microwave network analysis: Impedance and equivalent voltages and currents. Impedance and admittance matrices. ABCD matrices.
14	Microwave network analysis: Scattering matrix.
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	4	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering	**X**			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**X**			
3	Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				**X**
4	Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Electrical and Electronic Engineering, skills to use information technology effectively.			**X**	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Electrical and Electronic Engineering				**X**
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.				**X**
7	Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions.				**X**
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				**X**
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Scale for assessing the contribution of the course to the program outcomes:

4: High **3: Medium** **2: Low** **1:None**

Name of Instructor(s): Prof. Dr. Gökhan ÇINAR

Signature(s):

Date:

ESOGU ELECTRICAL - ELECTRONICS ENGINEERING DEPARTMENT

TECHNICAL ELECTIVES (3+0)(0+2)

ESOGÜ Elektrik-Elektronik Mühendisliği Bölümü Ders Bilgi Formu

DERSİN KODU: 151228498 **DERSİN ADI:** Fuzzy Logic

YARIYIL	HAFTALIK DERS SAATİ		DERSİN		
	Teorik	Uygulama	Kredisi	AKTS	TÜRÜ
8	3	0	3	5	ZORUNLU ( ) SEÇMELİ (x)

Dersin kredisini (kredisiz derslerde haftalık saatini) aşağıya işleyiniz (Gerekli görüyorsanız paylaştırınız.).

Matematik ve Temel Bilimler	Mesleki Konular [Önemli düzeyde tasarım içeriyorsa (√) koyunuz.]	Genel Eğitim	Sosyal
0	3 ( )	0	0

ÖLÇME- DEĞERLENDİRME ETKİNLİKLERİ	TEORİK- UYGULAMALI DERSLER			LABORATUVAR DERSLERİ		
YARIYIL İÇİ	Faaliyet türü	Sayı	%	Faaliyet türü	Sayı	%
	Ara Sınav	2	60	Kısa Sınav		
	Kısa Sınav			Deneyin Yapılışı		
	Ödev			Rapor		
	Proje			Rapor Sözlüsü		
	Diğer (……)			Diğer (……)		
YARIYIL SONU SINAVI		1	40			
MAZERET SINAVI (Sözlü/Yazılı)	Sözlü					

VARSA ÖNERİLEN ÖNKOŞUL(LAR)	Yok
DERSİN KISA İÇERİĞİ	Klasik küme ve bulanık kümeler, klasik ve bulanık ilişkiler, üyelik fonksiyonları, klasik-bulanık ve bulanık-klasik çevrimleri, bulanık aritmetik, genişleme yasası, bulanık kural tabanlı sistemler, bulanık karar verme, bulanık sınıflandırma.
DERSİN AMAÇLARI	Bulanık mantık kavramını tanıtmak, bulanık mantık temellerini öğretmek, öğrencilere karmaşık sistemleri kelimelerle modelleyebilme ve bulanık mantık çerçevesinde değerlendirme yapabilme becerilerini kazandırmaktır.
DERSİN MESLEK EĞİTİMİNİ SAĞLAMAYA YÖNELİK KATKISI	Öğrenciler bulanık mantığı tanıyacak, mesleki bir uygulama veya mesleki bir tasarım yaparken ihtiyaç duyduklarında bulanık mantık kavramını kullanabileceklerdir.
DERSİN ÖĞRENİM ÇIKTILARI	1) Bulanık mantık hakkında genel bilgi sahibi olmak 2) Bulanık mantıkla tasarlanmış bir sistemi analiz edebilme becerisi kazanmak 3) Bulanık mantık kullanarak temel tasarımlar yapabilme (üyelik fonksiyonları tanımlayabilme, kural tabanlı bir bulanık sistem oluşturup bulanık çıkarımlarla değerlendirip çıktıları bulanık veya kesin olarak kullanabilme) becerisi kazanmak
TEMEL DERS KİTABI	Timothy J. Ross, Fuzzy Logic With Engineering Applications, McGraw Hill, 1995.
YARDIMCI KAYNAKLAR	1) J.R. Jang, C.Sun, Neuro-Fuzzy and Soft Computing, Prentice Hall, 1997 2) G.J. Klir, B. Yuan, Fuzzy Sets and Fuzzy Logic Theory and Applications, Prentice Hall, 1995
DERSTE GEREKLİ ARAÇ VE GEREÇLER	

DERSİN HAFTALIK PLANI	
HAFTA	**İŞLENEN KONULAR**
1	Bulanık mantık - giriş
2	Klasik küme ve bulanık kümeler
3	Klasik ilişkiler, bulanık ilişkiler
4	Kesikli ve sürekli üyelik fonksiyonları
5	Üyelik fonksiyonları oluşturma yöntemleri
6	1. Ara sınav
7	Bulanıktan kesin değere çevrim
8	Bulanık aritmetik, bulanık rakamlar
9	Bulanık genişleme yasası
10	Klasik mantık ve bulanık mantık karşılaştırmaları
11	2. Ara sınav
12	Bulanık kural tabanlı sistemler
13	Mamdani ve Sugeno bulanık çıkarım sistemleri
14	Bulanık karar verme, bulanık sınıflandırma
15,16	Yarıyıl sonu sınavı

Dersin Program Çıktılarına Katkısı

NO	PROGRAM ÇIKTISI	3 çok	2 orta	1 az	0 hiç
1	Matematik, fen bilimleri ve Elektrik-Elektronik Mühendisliği konularında yeterli bilgi birikimi; bu alanlardaki kuramsal ve uygulamalı bilgileri Elektrik-Elektronik Mühendisliği problemlerini modelleme ve çözme için uygulayabilme becerisi.		X		
2	Elektrik-Elektronik Mühendisliği ve ilgili alanlarda karmaşık mühendislik problemlerini saptama, tanımlama, formüle etme ve çözme becerisi; bu amaçla uygun analiz ve modelleme yöntemlerini seçme ve uygulama becerisi.	X			
3	Gerçekçi kısıtlar ve koşullar altında ve belirli gereksinimleri kapsayacak şekilde Elektrik-Elektronik Mühendisliğini ilgilendiren karmaşık bir sistemi, cihazı veya ürünü modern tasarım yöntemlerini uygulayarak tasarlama becerisi.		X		
4	Elektrik-Elektronik Mühendisliği uygulamaları için gerekli olan modern teknik ve araçları geliştirme, seçme ve kullanma becerisi; bilişim teknolojilerini etkin bir şekilde kullanma becerisi.		X		
5	Elektrik-Elektronik Mühendisliği problemlerinin incelenmesi için deney tasarlama, deney yapma, veri toplama, sonuçları analiz etme ve yorumlama becerisi			X	
6	Disiplin içi ve çok disiplinli takımlarda etkin biçimde çalışabilme becerisi; bireysel çalışma becerisi.			X	
7	Türkçe ve İngilizce sözlü ve yazılı etkin iletişim kurma becerisi.				X
8	Yaşam boyu öğrenmenin gerekliliği bilinci; bilgiye erişebilme, bilim ve teknolojideki gelişmeleri izleme ve kendini sürekli yenileme becerisi		X		
9	Mesleki ve etik sorumluluk bilinci				X
10	Proje yönetimi ile risk yönetimi ve değişiklik yönetimi gibi iş hayatındaki uygulamalar hakkında bilgi; girişimcilik, yenilikçilik ve sürdürebilir kalkınma hakkında farkındalık.				X
11	Mühendislik uygulamalarının evrensel ve toplumsal boyutlarda sağlık, çevre ve güvenlik üzerindeki etkileri ile çağın sorunları hakkında bilgi; mühendislik çözümlerinin hukuksal sonuçları konusunda farkındalık.				X

Hazırlayan öğretim üyesi/üyeleri: Yrd. Doç. Dr. H. Serhan Yavuz

İmza(lar): **Tarih:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228499 **COURSE TITLE:** Fuzzy Logic Laboratory

Semester	**Weekly Hours**		**COURSE**		
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**
8	0	2	1	2	Compulsory ( ) Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
0	1 (√)	0	0

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm			Quiz		
	Quiz			Lab performance	7	35
	Homework			Report	7	35
	Project			Oral exam		
	Other (……)			Other (……)		
Final					1	30
Makeup exam (Oral/Written)				oral		

Prerequisites	Registration to 151228498-Fuzzy Logic is required
Brief content of the course	Classical sets and fuzzy sets, classical and fuzzy relations, membership functions, crisp-to-fuzzy and fuzzy-to-crisp conversions, fuzzy arithmetic, extension rule, fuzzy rule based systems, fuzzy decision making, fuzzy classification.
Objectives of the course	To introduce the fuzzy logic concept by using MATLAB.
Contribution of the course towards professional education	Students will be familiar with the concept of fuzzy logic, they will examine the concept by writing MATLAB scripts and making simulations in computer environment.
Outcomes of the course	1) To evaluate some fuzzy logic calculations in MATLAB 2) To design and simulate simple fuzzy logic systems by using the fuzzy logic toolbox of MATLAB.
Textbook of the course	Timothy J. Ross, Fuzzy Logic With Engineering Applications, McGraw Hill, 1995.
Other reference books	1) Fuzzy Logic Toolbox User's Guide, Mathworks Coorp. 2) J.R. Jang, C.Sun, Neuro-Fuzzy and Soft Computing, Prentice Hall, 1997 3) G.J. Klir, B. Yuan, Fuzzy Sets and Fuzzy Logic Theory and Applications, Prentice Hall, 1995
Required material for the course	Computers running MATLAB

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Fuzzy logic - introduction
2	Fuzzy singleton, discrete and continuous fuzzy sets
3	Fuzzy set operations (complement, union, intersection)
4	Classical Cartesian product, fuzzy Cartesian product
5	Membership functions (including linguistic terms)
6	First midterm
7	Classical and fuzzy relations and compositions
8	Fuzzification and defuzzification methods
9	Fuzzy inference systems (FIS)
10	Fuzzy rules
11	Second midterm
12	Mamdani FIS and Sugeno FIS examples
13	Fuzzy clustering (FCM)
14	An independent fuzzy system design
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	3 high	2 Med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering		**X**		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	**X**			
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.		**X**		
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.		**X**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	**X**			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**X**		
7	Communicating effectively in oral and written form both in Turkish and English.		**X**		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		**X**		
9	Understanding of professional and ethical responsibility				**X**
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				**X**
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				**X**

Name of Instructor(s): Assist. Prof. Dr. H. Serhan Yavuz

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227411 **COURSE TITLE:** Communication Electronics

Semester	Weekly Hours		COURSE		
	Theoretical	Practical	Credits	ECTS	Type
7	3	0	3	5	Compulsory ( ) Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (√) if there is high design content]	General Education	Humanities
0	3 ( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm	2	60	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	oral					

Prerequisites	151226322 Electronics II
Brief content of the course	Introduction to communications electronics, amplitude modulation-frequency modulation theories and circuits, radio transmitters, power amplifiers, typical receiver circuits, transceivers, frequency synthesizers, multiplexing (FDM, TDM, PCM), antenna fundamentals, satellite communication, television and telephony system fundamentals
Objectives of the course	To introduce the principles of electronic communication and to introduce some basic communication electronics circuits.
Contribution of the course towards professional education	Students will learn some principle methods of analog communication and they will also get familiar with some communication electronics circuits.
Outcomes of the course	1) Introduce some basic communication electronics circuits 2) Construct a communication system in terms of blocks of communication circuits. 3) Learn basics of communication tools such as radio, television and telephony system.
Textbook of the course	Louis E. Frenzel, Communication Electronics: Principles and Applications, McGraw Hill, 2001.
Other reference books	Forrest Barker, Communication Electronics Systems, Circuits and Devices, Prentice Hall, 1987.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Communication electronics - introduction
2	Amplitude modulation, single-sideband modulation
3	Amplitude modulation circuits
4	Frequency modulation
5	Frequency modulator-demodulator and phase modulator circuits
6	First midterm
7	Radio transmitters, power amplifiers, impedance-matching networks
8	Superheterodyne receiver, intermediate frequency circuits, noise
9	Typical receiver circuits, transceivers and frequency synthesizers
10	Multiplexing: frequency division multiplexing, time-division multiplexing
11	Second midterm
12	Pulse code modulation, antenna fundamentals
13	Satellite communication, TV signal, cable, satellite and digital television
14	Telephone, fax and GSM communication
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	3	2	1	0
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering		X		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	X			
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.		X		
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.		X		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems			X	
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			X	
7	Communicating effectively in oral and written form both in Turkish and English.				X
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing			X	
9	Understanding of professional and ethical responsibility				X
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				X
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				X

Scale for assessing the contribution of the course to the program outcomes:

3: Very high **2: Medium** **1: Small** **0: None**

Name of Instructor(s): Assist. Prof. Dr. H. Serhan Yavuz

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227493 **COURSE TITLE:** Communication Electronics Laboratory

Semester	**Weekly Hours**		**COURSE**		
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**
7	0	2	1	2	Compulsory ( ) Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
0	1 (√)	0	0

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm			Quiz		
	Quiz			Lab performance	7	35
	Homework			Report	7	35
	Project			Oral exam		
	Other (……)			Other (……)		
Final					1	30
Makeup exam (Oral/Written)						

Prerequisites	151226357 Electronics Laboratory
Brief content of the course	Phase-shift oscillators, lead-lag network, op-amp oscillator, active filters, 555 timer circuit, amplitude modulation theory (MATLAB), AM modulator-demodulator circuit
Objectives of the course	To test and observe some basic communication electronics circuits by mounting them on the circuit board
Contribution of the course towards professional education	Students will gain the ability to mount, run and observe some basic communication electronics circuits on circuit boards.
Outcomes of the course	To improve circuit building practice by making some communication electronics experiments in the laboratory.
Textbook of the course	Laboratory manual
Other reference books	1) Louis E. Frenzel, Communication Electronics: Principles and Applications, McGraw Hill, 2001. 2) Forrest Barker, Communication Electronics Systems, Circuits and Devices, Prentice Hall, 1987.
Required material for the course	Circuit board, some basic electronic equipment such as resistors, capacitors, diodes and transistors, connection cables, power supply, multimeter and oscilloscope.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Communication electronics laboratory - introduction
2	Experiment-1 : phase-shift oscillators
3	Experiment-2 : lead-lag network
4	Experiment-3 : op-amp oscillator
5	Experiment-4 : active filters
6	First midterm
7	Experiment-5 : 555 timer
8	Experiment-6 : amplitude modulation theory (MATLAB)
9	Experiment-7 : AM modulator-demodulator circuit
10	Determination of term project subjects
11	Second midterm
12	Project progress report-1, discussion.
13	Project progress report-2, discussion.
14	Project presentations
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	3 high	2 Med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering		X		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		X		
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	X			
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.		X		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	X			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		X		
7	Communicating effectively in oral and written form both in Turkish and English.		X		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing			X	
9	Understanding of professional and ethical responsibility				X
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				X
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				X

Name of Instructor(s): Assist. Prof. Dr. H. Serhan Yavuz

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227621 **COURSE TITLE:** DIGITAL COMMUNICATIONS

Semester	**Weekly Hours**		**COURSE**		
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**
7	3	0	3	5	Compulsory ( ) Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (x) if there is high design content]	**General Education**	**Humanities**
0	3 (x)	0	0

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm	2	60	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	written					

Prerequisites	None
Brief content of the course	Modulations techniques in digital communication, ASK, FSK, PSK, QAM, waveform coding, PCM, DPCM, Delta-M, orthogonalization, MAP/ML decision criterion, channel coding error correcting techniques, parity, LRC, Hamming codes, polynomial coding, cyclic coding, convolutional coding and Viterbi algorithm, serial communication principles, bit synchronization, bit interleaving, examples in VHDL.
Objectives of the course	Learn the methods/techniques, problems and solutions and what is involved in digital communication.
Contribution of the course towards professional education	Students who choose to continue their carrier in communication will get to know the theoretical and some practical details of the subject. It is advised that a basic electronic communication course is completed before this course.
Outcomes of the course	1.Students learn basic digital communication systems 2.Make introduction to design of digital communication systems 3.Build knowledge base for advanced digital communication systems
Textbook of the course	B. Sklar, Digital Communications, Fundamentals and Applications, Prentice Hall, 2000
Other reference books	1) M.B. Pursley, Introduction to Digital Communications, Pearson-Prentica Hall, 2005. 2) V.A. Pedroni, Circuit Design with VHDL, MIT, 2004.
Required material for the course	Course is mostly theoretical. It includes one single experimental implementation in the class that is done altogether. For that, two FPGA development kit, a computer with VHDL development software installed, oscilloscope and spectrum analyzer are required

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Recall of modulation techniques used in digital communications; ASK, PSK, FSK, QAM
2	Waveform coding, PCM, DPCM, Delta-Modulation, PWM
3	Orthogonal signal sets, Gram-Schmidt orthogonalization
4	Channel capacity, introduction to channel coding
5	Block coding, Hamming codes
6	First midterm
7	Error detection, parity bit, LRC
8	General FEC, polynomial codes
9	Cyclic codes
10	Convolutional coding and Viterbi algorithm
11	Second midterm
12	Principles in serial communication, jitter, 8B10B
13	Bit synchronization, frame synchronization
14	Interleaving, communication example using VHDL/FPGA
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	3 high	2 med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	X			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		X		
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.		X		
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.			X	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				X
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			X	
7	Communicating effectively in oral and written form both in Turkish and English.				X
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		X		
9	Understanding of professional and ethical responsibility				X
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				X
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.			X	

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227630 **COURSE TITLE:** DIGITAL COMMUNICATIONS LAB

Semester	Weekly Hours		COURSE		
	Theoretical	Practical	Credits	ECTS	Type
7	0	2	1	2	Compulsory ( ) Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
0	( )	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm			Quiz	10	50
	Quiz			Lab performance		
	Homework			Report	10	50
	Project			Oral exam		
	Other (……)			Other (……)		
Final						
Makeup exam (Oral/Written)				Lab experiment		

Prerequisites	None
Brief content of the course	Lab experiments and MATLAB simulations of modulation techniques used in digital communication; ASK, FSK, PSK, QPSK, serial communication, jitter, bit synchronization, ADC/DAC, RZ, NRZ, Manchester, PWM, TDM.
Objectives of the course	Learn the methods/techniques, signals, problems and what is involved in digital communication in terms of transmission line signals.
Contribution of the course towards professional education	Students who choose to continue their carrier in communication will get to know some practical details of the digital communication. It is advised that a basic digital communication course is completed before this course or in parallel.
Outcomes of the course	1.Students learn signals in digital communication systems 2.Make introduction to design of digital communication systems 3.Build practical knowledge base for advanced digital communication systems
Textbook of the course	B. Sklar, Digital Communications, Fundamentals and Applications, Prentice Hall, 2000
Other reference books	1) M.B. Pursley, Introduction to Digital Communications, Pearson-Prentice Hall, 2005. 2) Contemporary Communication Systems using MATLAB, J.G. Proakis, M. Salehi, PWS Publishing Company. 3) V.A. Pedroni, Circuit Design with VHDL, MIT, 2004.
Required material for the course	This is a practical experimentation and lab course. Lab work contains 8+ experiments on digital communication. For these experiments, communication experiment kits and oscilloscopes with FFT function are required. In addition, students will use their own PC's for MATLAB Simulink experiments.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Use of the FFT function of the oscilloscope for spectrum analysis, spectrum of random-binary-stream
2	ASK modulation/demodulation and spectrum analysis
3	FSK modulation/demodulation and spectrum analysis
4	PSK modulation/demodulation and spectrum analysis
5	PWM, RZ, Manchester coding
6	
7	QPSK modulation/demodulation
8	Time Division Multiplexing
9	Generation of ASK and PSK signals in MATLAB-simulink
10	Generation of QPSK signals in MATLAB-simulink
11	
12	Serial transmission of analog signals using ADC-serializer-deserializer-DAC
13	Distortion and nois on baseband signals over transmission lines
14	Completion of missing/incomplete experiments
15,16	

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	3 high	2 med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering		x		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		x		
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.				x
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.			x	
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	x			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			x	
7	Communicating effectively in oral and written form both in Turkish and English.			x	
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				x
9	Understanding of professional and ethical responsibility				x
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				x
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				x

Name of Instructor(s): Erol Seke

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227421 **COURSE TITLE:** DSP SYSTEM DESIGN

Semester	Weekly Hours		COURSE		
	Theoretical	Practical	Credits	ECTS	Type
7	3	0	3	5	Compulsory () Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
	( )		

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	2	50	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project	1	20	Oral exam		
	Other (……)			Other (……)		
Final		1	30			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	TMS320C6000 DSP processors. Fixed- and floating point arithmetic and overflow. TMS3206713 DSK (Development System Kit). Code Composer Studio IDE and software development tools: assembler, compiler and linker. DSP hardware interfaces and programming: interrupts, DMA, serial port and timer. Real-time DSP Applications.
Objectives of the course	The aim of the course is to teach how to develop real-time signal processing system using DSP hardware and software.
Contribution of the course towards professional education	The student knows the DSP hardware and software and uses them in DSP applications efficiently.
Outcomes of the course	Students: 1. recognize architecture of DSP processor and differences between DSP and general purpose processor. 2.knows fixed- and floating point number representations 3.employ DSP hardware and software in system design. 4.develop DSP application in C/C++ and/or assembly. 5.know DSP peripheral interfaces and use them in applications. 6.knows-time DSP Applications and their implementations.
Textbook of the course	Rulph Chassaing, Digital Signal Processing and Applications with C6713 and C6416 DSK, John Willey and Sons, Inc., 2005
Other reference books	Steven A. Tretter, "Communication system design using DSP algorithms: with laboratory experiments for the TMS320C6700", Kluwer Academic Publishers, March 2003.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Real-time Digital Signal Processing and DSP Processors
2	Numerical Representations and Arithmetic
3	Architecture and Instruction Set of TMS320C6000 DSP
4	Software Development Tools
5	Assembly and Linear Assembly Programming, Interfacing C and Assembly
6	First midterm
7	Input and Output with DSK and Multichannel Serial Port
8	Interrupts
9	DMA and Frame Processing
10	Circular Buffers
11	Second midterm
12	Digital Filters, FIR and IIR
13	FFT
14	Other DSP Applications
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	3 high	2 med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	X			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		X		
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.		X		
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	X			
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				X
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			X	
7	Communicating effectively in oral and written form both in Turkish and English.				X
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		X		
9	Understanding of professional and ethical responsibility				X
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				X
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				X

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227422 **COURSE TITLE:** DSP SYSTEM DESIGN LABORATORY

Semester	**Weekly Hours**		**COURSE**		
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**
7	0	2	1	2	Compulsory (x) Elective ( )

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (x) if there is high design content]	**General Education**	**Humanities**
	( )		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm			Quiz		
	Quiz			Lab performance	8	60
	Homework			Report	8	20
	Project	1	20	Oral exam		
	Other (……)			Other (……)		
Final						
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	Introduction to TMS320C6713 DSK and Code Composer Studio. Input Output methods with DSK: status checking, interrupts, DMA. Waveform generation. C and assembly interface. Debugging. Digital filters. FTT. DSP application development using MATLAB Simulink and CCS.
Objectives of the course	The aim of the course is to teach how to use TMS320C6713 and Code Composer Studio in DSP Applications and get the students have practical experiences on several DSP applications.
Contribution of the course towards professional education	The students use TMS320C6713 DSK ve Code Composer Studio in DSP Applications efficiently and have practical experiences on the DSP Applications.
Outcomes of the course	Students: 1. develop application on TMS320C6713 DSK using Code Composer Stuido. 2. have practical experiences on DSP applications ve their implementations in the DSP platform. 3. use assembly ve C/C++ programming languages in software development efficiently. 4. develop DSP applications using MATLAB –Simulink and CCS.
Textbook of the course	-Laboratory manual -Rulph Chassaing, *Digital Signal Processing and Applications with C6713 and C6416 DSK*, John Willey and Sons, Inc., 2005
Other reference books	
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Get Familiar with TMS320C6713 DSK and Code Composer Studio
2	Input /Output with Status Checking
3	Waveform Generation – Lookup Table Method
4	Waveform Generation – Oscillator Design
5	Interfacing C and Assembly
6	First midterm
7	Streaming Data To/From a File
8	Input / Output Synchronization with Interrupt
9	FIR Filter
10	IIR Filter
11	Second midterm
12	DMA and FFT
13	DSP Algorithm Development with MATLAB
14	Project Work
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	3 high	2 med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering		X		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		X		
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.			X	
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	X			
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems				X
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		X		
7	Communicating effectively in oral and written form both in Turkish and English.		X		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		X		
9	Understanding of professional and ethical responsibility				X
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				X
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				X

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228541 **COURSE TITLE:** INTRODUCTION TO MECHATRONICS

Semester	**Weekly Hours**		**COURSE**		
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**
8	3	0	3	5	Compulsory ( ) Elective (x) Technical elective I group

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	( )		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
	Type	**Number**	**%**	**Activity Type**	**Number**	**%**
Midterm	Midterm	*1*	*30*	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project	*1*	*30*	Oral exam		
	Other (……)			Other (……)		
Final		*1*	*40*			
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	*Studying basics of the mechatronic and measurement systems. Studying theory and applications of the commonly used sensors and actuating instruments*
Objectives of the course	*Having a theoretical and practical background on mechatronic systems which the industry needs commonly today.*
Contribution of the course towards professional education	*This course will support and contribute to many electrical and electronics courses by giving mechanical, programming, and measurement aspects. It will do same effect to the mechanical engineering student courses.*
Outcomes of the course	*Familiarity to the mechatronic sytems in the Industry. Predevelopment of some problem solving abilities on the subject.*
Textbook of the course	*Introduction to Mechatronics and Measurement Systems, David G. Alciatore, Michael B. Histand*
Other reference books	*Books on measurement, measurement devices,electrical machineries, sensors, electronic and mechanical elements, PIC mikrocontrollers. User guides and data sheets also help.*
Required material for the course	*Measurement tools, some electronic circuit elements, sensors, motors, and PIC programmers. Computer Lab. Support also needed.*

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	*Introducing mechatronic and measurement system terminology*
2	*Basic electrical relations, circuit elements, and circuit analysis*
3	*Semiconductor electronics*
4	*Aproaches to analyzing and characterizing the response of mechatronic and meas. systems*
5	*Basics of analog signal processing and the design and analysis of operational amplifiers.*
6	*Basics of digital devices and the use of integrated circuits.*
7	*Microcontrollers and PIC microcontroller family*
8	Midterm
9	Midterm
10	*Data acquisitionand how to couple computers to the measurement systems*
11	*Common sensors in mechatronic systems*
12	*Common devices used for actuating mechatronic systems*
13	*Introduction to contol theory and its role in mechatronic system design*
14	*Overview of mechatronic system control architectures and some case studies*
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering		**x**	
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		**x**	
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.		**x**	
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	**x**		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems		**x**	
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**x**	
7	Communicating effectively in oral and written form both in Turkish and English.			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing			
9	Understanding of professional and ethical responsibility			
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.			
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.			

Scale for assessing the contribution of the course to the program outcomes:

3: Very high **2: Medium** **1: None**

Name of Instructor(s): Instructor Gökhan Dındış

Signature(s): **Date:** 10-11-2014

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151228542 **COURSE TITLE:** MECHATRONICS LABORATORY

Semester	**Weekly Hours**		**COURSE**		
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**
VIII	0	2	1	2	Compulsory ( ) Elective (x) Technical elective II group

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
1	(√)		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm			Quiz	*1*	*10*
	Quiz			Lab performance	*9*	*45*
	Homework			Report	*9*	*45*
	Project			Oral exam		
	Other (……)			Other (……)		
Final						
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	*Studying basics of the mechatronic and measurement systems. Studying theory and applications of the commonly used sensors and actuating instruments*
Objectives of the course	*Having a theoretical and practical background on mechatronic systems which the industry needs commonly today.*
Contribution of the course towards professional education	*This course will support and contribute to many electrical and electronics courses by giving mechanical, programming, and measurement aspects. It will do same effect to the mechanical engineering student courses.*
Outcomes of the course	*Familiarity to the mechatronic sytems in the Industry. Predevelopment of some problem solving abilities on the subject.*
Textbook of the course	*Introduction to Mechatronics and Measurement Systems, David G. Alciatore, Michael B. Histand*
Other reference books	*Books on measurement, measurement devices,electrical machineries, sensors, electronic and mechanical elements, PIC mikrocontrollers. User guides and data sheets also help.*
Required material for the course	*Measurement tools, some electronic circuit elements, sensors, motors, and PIC programmers. Computer Lab. Support also needed.*

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	*Introduction to laboratory. Rules.*
2	*Basic circuit elements experiment*
3	*Basic semiconductorelements experiment*
4	*OPAMP experiment I*
5	*OPAMP experiment II*
6	*PIC LED experiment*
7	*PIC LCD display experiment*
8	Midterm
9	Midterm
10	*PIC Voltmeter experiment*
11	*PIC temperature measurement experiment*
12	*PIC encoder reading experiment*
13	*PIC Step motor control experiment*
14	*PIC Projects*
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	3	2	1
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.			
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	**x**		
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.			
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	**x**		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		**x**	
7	Communicating effectively in oral and written form both in Turkish and English.			
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing			
9	Understanding of professional and ethical responsibility			
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.			
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.			

Scale for assessing the contribution of the course to the program outcomes:

3: Very high **2: Medium** **1: None**

Name of Instructor(s): Dr. Gökhan Dındış

Signature(s): **Date:** 10-11-2014

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227631 **COURSE TITLE:** INTRODUCTION TO VHDL

Semester	**Weekly Hours**		**COURSE**		
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**
7	3	0	3	5	Compulsory ( ) Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (x) if there is high design content]	**General Education**	**Humanities**
0	3 (x)	0	0

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
	Type	**Number**	**%**	**Activity Type**	**Number**	**%**
Midterm	Midterm	1	40	Quiz		
	Quiz	3	10	Lab performance		
	Homework	4	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	written					

Prerequisites	None
Brief content of the course	Introduction to programable devices, FPGA sturcture, design flow using VHDL, use of ISE software, VHDL signal/data types, design and use of components, connections,synchronous design, waveform and VHDL simulation test benches, use of LEDs and switches on the development kit, pitfalls in VHDL, variables, more complicated keywords in VHDL, correct use of arithmetic and logical operators, state-machines, functions and procedures, memory components, communication with external components using examples
Objectives of the course	Learn how to make designs on Field Programmable Gate Arrays using VHDL.
Contribution of the course towards professional education	Students who choose to continue their carrier in advanced circuit will get to know the theoretical and some practical details of one of the highly technical and advanced subject. It is advised that a basic digital circuit design course is completed before this course.
Outcomes of the course	1.Students learn basics of FPGAs and VHDL 2.Make introduction to design of digital systems using VHDL 3.Build knowledge base for advanced VHDL and FPGA based designs 4.Build self-confidence for high technology digital systems
Textbook of the course	V.A. Pedroni, Circuit Design with VHDL, MIT Press
Other reference books	1) M.B. Pursley, Introduction to Digital Communications, Pearson-Prentica Hall, 2005. 2) Open-Core
Required material for the course	Course is highly practical involving both in class and in lab practical designs and experiments (within INTRODUCTION TO VHDL LAB course). For each student, an FPGA development kit, a computer with VHDL development software installed are required. Course slides and previous example designs are provided to students.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Internals of FPGA, VHDL, an example introductory application
2	Design flow using ISE, an example run
3	VHDL signal/data types, defining new types, examples of combinatorial circuit designs
4	Synchronous circuits, design of a test bench and use of related software
5	Signal attributes, standard libraries, common pitfalls
6	Variables
7	CASE, WHEN, FOR, GENERATE keywords, GENERIC keyword
8	Midterm
9	Midterm
10	Logical and arithmetic operators, state-machines
11	Functions and procedures
12	Use of memory components, BRAM, example of serial communicaiton
13	Presentations of term-projects, discussions and demonstrations
14	Presentations of term-projects, discussions and demonstrations
15,16	Final exam

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	3 high	2 med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	x			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	x			
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	x			
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	x			
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	x			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		x		
7	Communicating effectively in oral and written form both in Turkish and English.				x
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		x		
9	Understanding of professional and ethical responsibility				x
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.			x	
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				x

Name of Instructor(s): Erol Seke

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227632 **COURSE TITLE:** INTRODUCTION TO VHDL LAB

Semester	Weekly Hours		COURSE		
	Theoretical	Practical	Credits	ECTS	Type
7	0	2	1	2	Compulsory ( ) Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
0	1 (x)	0	0

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
Midterm	Type	Number	%	Activity Type	Number	%
	Midterm			Quiz	8	30
	Quiz			Lab performance	8	40
	Homework			Report	8	30
	Project			Oral exam		
	Other (……)			Other (……)		
Final						
Makeup exam (Oral/Written)	written					

Prerequisites	None
Brief content of the course	This lab course is in parallel with Introduction to VHDL course. Introduction to programable devices, FPGA sturcture, design flow using VHDL, use of ISE software, VHDL signal/data types, design and use of components, connections,synchronous design, waveform and VHDL simulation test benches, use of LEDs and switches on the development kit, pitfalls in VHDL, variables, more complicated keywords in VHDL, correct use of arithmetic and logical operators, state-machines, functions and procedures, memory components, communication with external components using examples
Objectives of the course	Learn how to make designs on Field Programmable Gate Arrays using VHDL.
Contribution of the course towards professional education	Students who choose to continue their carrier in advanced circuit will get to know the theoretical and some practical details of one of the highly technical and advanced subject. It is advised that a basic digital circuit design course is completed before this course.
Outcomes of the course	1.Students learn basics of FPGAs and VHDL 2.Make introduction to design of digital systems using VHDL 3.Build knowledge base for advanced VHDL and FPGA based designs 4.Build self-confidence for high technology digital systems
Textbook of the course	V.A. Pedroni, Circuit Design with VHDL, MIT Press
Other reference books	1) M.B. Pursley, Introduction to Digital Communications, Pearson-Prentica Hall, 2005. 2) Open-Core
Required material for the course	Course is highly practical involving both in class and in lab practical designs and experiments. For each student, an FPGA development kit, a computer with VHDL development software installed are required. Course slides and previous example designs are provided to students.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Starting and handling an ISE project
2	3-to-8 decoder design
3	4 bit up-counter
4	Creating and designing a VHDL test bench
5	Design a key-debouncer
6	Instantiation and creating two 4-bit counters
7	Knight-rider design with counters/decoders
8	Midterm
9	Midterm
10	Rotary encoder design
11	State machine example
12	Use of memory components, BRAM example
13	SPI communication example design
14	Completion of course term projects
15,16	Final exam

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	3 high	2 med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	x			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	x			
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	x			
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.	x			
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	x			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		x		
7	Communicating effectively in oral and written form both in Turkish and English.				x
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		x		
9	Understanding of professional and ethical responsibility				x
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.			x	
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				x

Name of Instructor(s): Erol Seke

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227420 **COURSE TITLE:** Linear Control Systems

Semester	**Weekly Hours**		**COURSE**		
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**
7	3	0	3	5	Compulsory ( ) Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
0	3 (√)	0	0

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
	Type	**Number**	**%**	**Activity Type**	**Number**	**%**
Midterm	Midterm	2	50	Quiz		
	Quiz	5	10	Lab performance		
	Homework	7	10	Report		
	Project			Oral exam		
	Other (……)			Other (……)		
Final		1	30			
Makeup exam (Oral/Written)	Written					

Prerequisites	Fundamentals of Control Systems
Brief content of the course	Controller design using root locus and frequency response approaches. Lag, lead, lag-lead compensators, PI, PD ve PID controllers. State space analysis of control systems. Controllability and observability. Controller design by state space approach. State feedback controller. Observer.
Objectives of the course	Designing appropriate controller and/or observer such that the feedback control system satisfies desired response.
Contribution of the course towards professional education	In this course students design and implement several controllers and observers to satisfy given conditions. With this respect, students become ready to solve engineering problems that they will face during their career.
Outcomes of the course	Students completing this course successfuly 1) gain knowledge on design concept 2) have experience on desgin with different approaches 1)learn how and in what capacity a system's requirements can be satisfied.
Textbook of the course	Ogata, K., Modern Control Engineering, Prentice Hall, Inc., 4th Ed. 2001
Other reference books	Dorf, A., Modern Control Systems, Addison Wesley, 9th Ed., 2001. Nise, B., Control Systems Engineering, John Wiley, 3rd Ed., 2000
Required material for the course	MATLAB program

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Design criteria of control systems in time and frequency domains. Overshoot, settling time, steady-state error, phase and gain margins.
2	Root locus design of lag and lead compensators.
3	Root locus design of lag-lead compensator,. PI, PD, and PID controllers.
4	Compensator and controller design using Bode diagrams.
5	Minor-loop controller design
6	First midterm exam
7	Steady-state representation of dynamic systems
8	Canonic representations
9	Analysis od dynamic systems in state space
10	Controllability and observability
11	Second midterm exam
12	Controller and observer design.
13	Observer-based controller design
14	Linear quadratic controler
15,16	Final exam

NO	OUTCOMES OF THE PROGRAMME	3 high	2 med	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	X			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	X			
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	X			
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.		X		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems		X		
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.			X	
7	Communicating effectively in oral and written form both in Turkish and English.				X
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				X
9	Understanding of professional and ethical responsibility				X
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				X
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				X

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227624 **COURSE TITLE:** Linear Control Systems Laboratory

Semester	**Weekly Hours**		**COURSE**		
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**
7	0	2	1	2	Compulsory ( ) Elective (X)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	1 (√)		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm			Quiz		
	Quiz			Lab performance	7	60
	Homework			Report	7	40
	Project			Oral exam		
	Other (……)			Other (……)		
Final						
Makeup exam (Oral/Written)						

Prerequisites	
Brief content of the course	PI, PD, PID controllers and lag, lead, lag-lead compensator designs based on root-locus and bode diagrams, State-space representation of control systems, pole placement design, full-state observer design.
Objectives of the course	Realization of the controller or compensator designs to provide specified control systems' characteristics on MATLAB.
Contribution of the course towards professional education	In this course, Students realize the knowledge about analysis methods that they have learned in the course, *Linear Control Systems*, on MATLAB. This makes them more powerful about the engineering problems that they faced with later.
Outcomes of the course	At the end of the course, students; 1) will learn to realize the design procedure of required controllers to provide the specified characteristics of control systems on MATLAB. 2) will learn the state space representation of control systems and state space design on MATLAB.
Textbook of the course	Laboratory experiment manuals
Other reference books	Dorf A., Modern Control Systems, Addison Wesley, 9th Ed., 2001. Nise B., Control Systems Engineering, John Wiley, 3rd Ed., 2000.
Required material for the course	MATLAB

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	
2	
3	
4	PI/Lag and PD/Lead Compensator Design
5	PID/Lag-Lead and Feedback Compensator Design
6	First midterm
7	Lag Compensator Design using the Bode Diagrams
8	Lead and Lag-Lead Compensator Design using the Bode Diagrams
9	State Space Representation of Dynamical Systems
10	
11	Second midterm
12	Pole Placement
13	Full-State Observer
14	
15,16	Final

NO	OUTCOMES OF THE PROGRAMME	3 high	2 Med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering		X		
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		X		
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.	X			
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.		X		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems			X	
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		X		
7	Communicating effectively in oral and written form both in Turkish and English.		X		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing				X
9	Understanding of professional and ethical responsibility				X
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				X
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				X

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227409 **COURSE TITLE:** PLC Automation Systems

Semester	**Weekly Hours**		**COURSE**		
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**
7	3	0	3	5	Compulsory ( ) Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	3 (√)		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm	1	30	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project	1	30	Oral exam		
	Other (……)			Other (……)		
Final		1	40			
Makeup exam (Oral/Written)	Oral					

Prerequisites	The course must be taken with "PLC Automation Systems Laboratory" course.
Brief content of the course	Introduction to PLC and PLC components. S7-200 PLC and its features. Input-Ouput devices. Step-7 MicroWin32 software development tool. Software development with LAD and STL. PLC instruction set and applications. Analog input and output. Open- and closed-loop control.
Objectives of the course	The aim of the course is to introduce architecture of PLCs that are used in control applications widely and their fundamental components; and to show how to develop open/closed loop controls using S7-200 PLCs.
Contribution of the course towards professional education	Students know use of PLC and other tools and devices in control systems. They know input/output devices used PLC-based Systems.
Outcomes of the course	Student 1. Knows PLC architecture and its components. 2. Knows features of sensors and actuators. 3. Can make developement in LAD and STL. 4. Can develop a control application using S7-200 PLC.
Textbook of the course	-*Programmable Logic Controllers Principles and Applications*, J.W. Webb and R.A.Reis Prentice Hall 2003. -*Programmable Logic Controllers*, Brion S. Morris, Prentice Hall 2000
Other reference books	*Simatic S7-200 System Manual*, 2002.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	What is a PLC? PLC Components
2	Introduction to Siemens S7-200 PLC
3	Ladder Logic and Statement List, Scan Cycle
4	S7-200 Basic Functions: Logic Stack, Boolean Contact Instructions
5	Jump and Subroutine Instructions
6	**1. Midterm**
7	Timer and Counter
8	Arithmetic and Data Move Functions
9	Special PLC Instructions: Shift, Table, Find, Conversion
10	High Speed Functions: Outputs and Counters
11	**2. Midterm**
12	Analog Input and Output, Open Loop and Closed Loop Control
13	Advanced PLC Functions
14	PLC applications
15,16	**Final**

NO	OUTCOMES OF THE PROGRAMME	3 high	2 Med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Computer Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Computer Engineering		X		
2	Ability to identify complex engineering problems in Computer Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		X		
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Computer Engineering.	X			
4	Having skills to develop, select and apply modern techniques and tools needed for Engineering applications, skills to use information technology effectively.	X			
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Computer Engineering problems	X			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		X		
7	Communicating effectively in oral and written form in Turkish and one foreign language.			X	
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing			X	
9	Understanding of professional and ethical responsibility				X
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.				X
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				X

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227410 **COURSE TITLE:** PLC Automation Systems Laboratory

Semester	**Weekly Hours**		**COURSE**		
	Theoretical	**Practical**	**Credits**	**ECTS**	**Type**
7	0	2	1	2	Compulsory () Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	**Electrical Engineering** [mark (√) if there is high design content]	**General Education**	**Humanities**
	( )		

Assessment	**THEORETICAL-PRACTICAL COURSES**			**LABORATORY COURSES**		
Midterm	**Type**	**Number**	**%**	**Activity Type**	**Number**	**%**
	Midterm			Quiz		
	Quiz			Lab performance	8	50
	Homework			Report	8	20
	Project	1	30	Oral exam		
	Other (……)			Other (……)		
Final						
Makeup exam (Oral/Written)						

Prerequisites	The course must be taken with "PLC Automation Systems" course.
Brief content of the course	Introduction to S7-200 PLC and Step-7 MicroWin32. Input/output devices. S7-200 PLC instruction set and applications. Analog input and output. Open and closed loop control.
Objectives of the course	The aim of the course is to show how to develop on/off and open/closed loop Applications using S7-200 PLC, and get the students have practical experiences.
Contribution of the course towards professional education	Students learn PLC hardware, software and use of input/output devices. They recognize and know PLC instruction and makes system solutions using them.
Outcomes of the course	Student 1. Knows S7-200 PLC architecture, PLC components, sensors and actuators and their features. 2. Efficiently use the instructions in the applications. 3. Have practical experience to implement Applications with S7-200 PLC
Textbook of the course	-*Experimental Manual.* -*Programmable Logic Controllers Principles and Applications*, J.W. Webb and R.A.Reis Prentice Hall 2003. -*Programmable Logic Controllers*, Brion S. Morris, Prentice Hall 2000
Other reference books	*Simatic S7-200 System Manual*, 2002.
Required material for the course	

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Get Familiar with Step-7 MicroWin32 and S7-200 PLC
2	Sensor and actuators
3	Bit Logic instructions
4	Sequencing
5	Timer instructions
6	**1. Midterm**
7	Counter instructions
8	Program Control Instructions
9	Math instructions
10	Interrupts
11	**2. Midterm**
12	Analog input and output,
13	Open/closed loop control
14	Project work
15,16	**Final**

NO	OUTCOMES OF THE PROGRAMME	3 hihg	2 Med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Computer Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Computer Engineering		X		
2	Ability to identify complex engineering problems in Computer Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.		X		
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Computer Engineering.		X		
4	Having skills to develop, select and apply modern techniques and tools needed for Engineering applications, skills to use information technology effectively.	X			
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Computer Engineering problems	X			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.		X		
7	Communicating effectively in oral and written form in Turkish and one foreign language.		X		
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		X		
9	Understanding of professional and ethical responsibility			X	
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.			X	
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.				X

Name of Instructor(s):

Signature(s): **Date:**

ESOGÜ Electrical-Electronics Engineering Department

COURSE CODE: 151227625 **COURSE TITLE:** Microcontrollers

Semester	Weekly Hours		COURSE		
	Theoretical	Practical	Credits	ECTS	Type
7	3	0	3		Compulsory ( ) Elective (x)

Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.).

Math and Basic Science	Electrical Engineering [mark (x) if there is high design content]	General Education	Humanities
-	3 (x)	-	-

Assessment	THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
	Type	Number	%	Activity Type	Number	%
Midterm	Midterm	2	20	Quiz		
	Quiz			Lab performance		
	Homework			Report		
	Project		50	Oral exam		
	Other (……)			Other (……)		
Final	Comprehensive	1	30			
Makeup exam (Oral/Written)	Oral					

Prerequisites	Digital Systems I, Digital Systems II, Introduction to Microcomputers
Brief content of the course	Fundamental structures in PIC16F877, Modules in PIC16F877, Programming of PIC16F877 by PIC assembly, MPASM
Objectives of the course	In this class, structure, programming and application of midrange PIC microcontrollers (typically PIC16F877) are given.
Contribution of the course towards professional education	%50 of general average grade comes from the project grade in this class. The students, taking this class, are grouped as at most five students and a term project is given into each group. The term project consists of design, realization and test stages. The components of the project are purchased by the members of the group. At the end of the semester, each group presents their project and show their designed microcontroller system's performance on the real system.
Outcomes of the course	A student, who digests the knowledge given in this class and successful in his term project, can analyze and design microcontroller system for specific purposes. Also this student can study and understand higher level microcontrollers (for instance 18 series) by himself
Textbook of the course	PICmicro Mid-Range MCU Family Reference Manual, Microchip Technology Inc. 1997
Other reference books	Auxiliary tools such as example program and projects, data books, manuals can be found in **www.microchip.com** web site.
Required material for the course	Necessary hardware components for each project are bought by the student in that group.

WEEKLY PLAN OF THE COURSE	
Week	**Topics**
1	Introduction to mid-range PIC microcontrollers, Oscillators, Reset circuit, Necessary examples related with the subjects
2	Architecture, CPU and ALU, Memory organizations, Necessary examples related with the subjects
3	Data EEPROM, Interrupts, I/O ports, Necessary examples related with the subjects
4	PSP (parallel slave port), Timer0, Timer1, PSP (parallel slave port), Timer0, Timer1, Necessary examples related with the subjects
5	Timer2, CCP module, Timer2, CCP module, Necessary examples related with the subjects
6	1. Ara sınav
7	MSSP module, USART, Necessary examples related with the subjects
8	10-bit ADC module, In circuit serial programming, Necessary examples related with the subjects
9	Instruction set, Necessary examples related with the subjects
10	Summary of MPASM, Necessary examples related with the subjects
11	2. Ara sınav
12	PIC assembler compiler directives, Necessary examples related with the subjects
13	The general structure of MPLAB IDE, Necessary examples related with the subjects
14	Introduction of a sample project (hardware and software)
15,16	Final

Contribution of the course to the program outcomes

NO	OUTCOMES OF THE PROGRAM	3 high	2 med.	1 low	0 none
1	Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering	x			
2	Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods.	x			
3	Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering.		x		
4	Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively.		x		
5	Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems	x			
6	Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas.	x			
7	Communicating effectively in oral and written form both in Turkish and English.			x	
8	Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing		x		
9	Understanding of professional and ethical responsibility	x			
10	Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development.		x		
11	Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions.			x	

Name of Instructor(s): Salih FADIL

Signature(s): Prof. Dr. Salih FADIL **Date:** March 22, 2011