



Firat University

FACULTY OF ENGINEERING
ELECTRICAL-ELECTRONICS ENGINEERING

YDİ110 Advance English-II				
Semester	Course Code	Course Name	L+P	Credit
2	YDİ110	Advance English-II	2	2

Language of Instruction:

Turkish

Course Level:

Faculty

Work Placement(s):

No

Department / Program:

ELECTRICAL-ELECTRONICS ENGINEERING

Course Type:

Zorunlu

Goals:

• To expand general language adequacy by preceding use of the target language and production via receptive language with the help of reading texts covered thoroughly in integration of the four strands of listening, reading, speaking and writing. • Enhancing language skills regarding listening, speaking, reading and writing. • Educating so as to get students to acquire foreign language skills needed in their academic studies and business life. • To teach how to use the topics covered in the flow of the course in four skills of a language (listening, speaking, reading and writing).

Teaching Methods and Techniques:

1)Trouble at the Airport 2)Smart Guard 3)School Clothes 4)It's Hard to Stop 5)Stuck in the Mud 6)Cops on Wheels Review:1-6 7)Try a Little Kindness 8)Girls Save Falling Child 9)The Wedding Dress 10)A Worm a Day 11)Miracle Woman 12)Boy Genius Review:7-12 13)Fighting Crime with Books 14)Back in the Water Again 15)Cows Prefer Beethoven 16)A Cool Hotel 17)Small Woman Is Big Hero 18)The Smartest Home Review:13-18

Prerequisites:

Course Coordinator:

Instructors:

Instructor Çerkez Topluk

Assistants:

Recommended Sources	
Textbook	: Dictionary
Resources	: Totally True Book 2 (By Jann Huizenga - Oxford University Press)
Documents	:
Assignments	:
Exams	:

Course Category	
Mathematics and Basic Sciences	: Education
Engineering	: Science
Engineering Design	: Health
Social Sciences	: Field

Course Content			
Week	Topics	Study Materials	Materials
1	-Introduction / Getting to know the course material, syllabi and assessmentUnit 1- Trouble at the AirportUnit 2- Smart Gua	Unknown words	Course BookDictionary
2	Unit 2- Smart Guard(2. half)Unit 3- School Clothes	Unknown words	Course BookDictionary
3	Unit 4- It's Hard to StopUnit 5- Stuck in the Mud(1. half)	Unknown words	Course BookDictionary
4	Unit 5- Stuck in the Mud(2. half)Unit 6- Cops on Wheels	Unknown words	Course BookDictionary
5	Review:1-6Unit 7- Try a Little Kindness(1. half)	Unknown words	Course BookDictionary
6	Unit 7- Try a Little Kindness(2. half)Unit 8- Girls Save Falling Child	Unknown words	Course BookDictionary
7	Unit 9- The Wedding DressUnit 10- A Worm a Day(1. half)	Unknown words	Course BookDictionary
8	Unit 10- A Worm a Day(2. half)Unit 11- Miracle Woman	Unknown words	Course BookDictionary
9	Unit 12- Boy GeniusReview:7-12(1. half)	Unknown words	Course BookDictionary
10	Review:7-12(2. half)Unit 13- Fighting Crime with Books---MID-TERMS---	Unknown words	Course BookDictionary
11	Unit 14- Back in the Water AgainUnit 15- Cows Prefer Beethoven(1. half)	Unknown words	Course BookDictionary
12	Unit 15- Cows Prefer Beethoven(2. half)Unit 16- A Cool Hotel	Unknown words	Course BookDictionary
13	Unit 17- Small Woman Is Big HeroUnit 18- The Smartest Home(1. half)	Unknown words	Course BookDictionary
14	Unit 18- Making an International Star(2. half)Review: Units 13-18---FINAL EXAMINATIONS---	Unknown words	Course BookDictionary

Course Learning Outcomes	
No	Learning Outcomes
C01	Students learn how to use the topics covered in the flow of the course in four skills of a language (listening, speaking, reading, writing).

Program Learning Outcomes	
No	Learning Outcome
P08	Ability to work effectively in disciplinary and multi-disciplinary teams.
P02	Ability to define, formulate and solve complex engineering problems; ability to select and apply appropriate modeling and analysis methods for this purpose.
P07	Professional and ethical responsibility
P06	Ability to communicate effectively in Turkish orally and in writing; knowledge of at least one foreign language.
P01	Sufficient knowledge in mathematics, science and electrical and electronic engineering; ability to apply theoretical and applied knowledge in these fields to engineering problems.
P05	Ability to design and conduct experiments, collect data, analyze and interpret results for the study of engineering problems.
P03	Ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, the ability to apply modern design methods
P11	Information about the effects of engineering practices on health, environment and safety in universal and social dimensions and the problems of the age; awareness of the legal consequences of er
P09	Awareness of the necessity of lifelong learning; the ability to access information, follow developments in science and technology, and constantly renew oneself.
P10	Information on project management and business practices such as risk management and change management; awareness of entrepreneurship, innovation and sustainable development.
P04	Ability to develop, select and use modern techniques and tools necessary for engineering practice; Ability to use information technologies effectively.

Assessment			ECTS Allocated Based on Student Workload			
In-Term Studies	Quantity	Percentage	Activities	Quantity	Duration	Total Work Load
Mid-terms	1	%40	Course Duration	14	2	28
Quizzes	0	%0	Hours for off-the-c.r.stud	14	2	28
Assignment	0	%0	Assignments	0	0	0
Attendance	0	%0	Presentation	0	0	0
Practice	0	%0	Mid-terms	1	5	5
Project	0	%0	Practice	0	0	0
Final examination	1	%60	Laboratory	0	0	0
Total		%100	Project	0	0	0
			Final examination	1	10	10
			Total Work Load			71
			ECTS Credit of the Course			2

Course Contribution To Program				
Contribution: 1: Very Slight 2:Slight 3:Moderate 4:Significant 5:Very Significant				
	P06	P08	P09	
All	5	4	4	
C01	5	4	4	



Firat University

FACULTY OF ENGINEERING
ELECTRICAL-ELECTRONICS ENGINEERING

MAT162 Mathematics-2					
Semester	Course Code	Course Name	L+P	Credit	ECTS
2	MAT162	Mathematics-2	4	4	6

Language of Instruction:

Turkish

Course Level:

Faculty

Work Placement(s):

No

Department / Program:

ELECTRICAL-ELECTRONICS ENGINEERING

Course Type:

Zorunlu

Goals:

To gain the fundamentals of contemporary Mathematics, to gain our students who are competent in their field of study, self-confident, engaged in critical thinking and able to express themselves, to train the students as a researcher in their particular field.

Teaching Methods and Techniques:

Sequences, series, multi-variable functions, double integral, improper integral.

Prerequisites:

Course Coordinator:

Instructors:

Assistants:

Recommended Sources

Textbook	:	Analiz II, Mustafa BALCI
Resources	:	Genel Matematik II, Mustafa BALCI
Documents	:	Çözümlü Analiz problemleri II, Mustafa BALCI., Çözümlü Genel Matematik problemleri II, Mustafa BALCI.
Assignments	:	
Exams	:	

Course Category

Mathematics and Basic Sciences	:	100	Education	:	
Engineering	:		Science	:	
Engineering Design	:		Health	:	
Social Sciences	:		Field	:	

Course Content

Week	Topics	Study Materials	Materials
1	Sequences, series		
2	tests of convergence, power series, Taylor and Maclaurin series		
3	Multi-variable functions (Limitation, continuity)		
4	Multi-variable functions (Partial differentiation, chain rule)		
5	Multi-variable functions (exact differential, implicit function derivative, directional derivative).		
6	Multi-variable functions (Taylor series, local extremum value, account of max. and min.)		
7	Multi-variable functions (Account of max. and min., functional dependence, vector fields).		
8	Multi-variable functions (geometric means of partial derivative, derivative under the integral sign)		
9	Solved problems (MID TERM)		
10	Double integral		
11	Double integral (region transformations)		
12	Application of double integral (field and volume measurement).		
13	Application of double integral (mass and center of gravity calculation).		
14	Improper integral (MAKE-UP EXAM)		
15	FINAL EXAMS		

Course Learning Outcomes

No	Learning Outcomes
C01	Learn basic concepts related to sequences and series, to be calculate the total of the series and learn concepts of convergence, divergence.
C02	To control whether a series converges. To be find at which point in a series that is convergent with the help of power series and can open the function to Taylor series in the desired point.
C03	Calculate the limits of multi-variable functions and to be find whether a given point in time.
C04	According to a desired variables of multi-variable function, if you need to which rule, you can find partial derivative using it.
C05	To find a multi-variable function that can lead to Taylor series until the desired order derivatives in a given point.
C06	To calculate its maximum and minimum finding the extreme points of a multi-variate function.
C07	To make the geometric interpretation of partial derivative and solve a given problem.
C08	To calculate the derivative under the integral sign using partial derivative and partial integral.
C09	To calculate a double integral by changing the order of integration directly.
C10	To calculate the integral by converting given a complicated field to an easier field with the help of the field transformation by determining double integrals with force solution.
C11	To make calculations for applications as field, volume, mass center, barycentre by using double integral.
C12	To detect what kind of generalized integral of a given integral and can be calculated integral by using the required methods.

Program Learning Outcomes

No	Learning Outcome
P08	Ability to work effectively in disciplinary and multi-disciplinary teams.
P02	Ability to define, formulate and solve complex engineering problems; ability to select and apply appropriate modeling and analysis methods for this purpose.
P07	Professional and ethical responsibility
P06	Ability to communicate effectively in Turkish orally and in writing; knowledge of at least one foreign language.
P01	Sufficient knowledge in mathematics, science and electrical and electronic engineering; ability to apply theoretical and applied knowledge in these fields to engineering problems.
P05	Ability to design and conduct experiments, collect data, analyze and interpret results for the study of engineering problems.
P03	Ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, the ability to apply modern design methods
P11	Information about the effects of engineering practices on health, environment and safety in universal and social dimensions and the problems of the age; awareness of the legal consequences of er
P09	Awareness of the necessity of lifelong learning; the ability to access information, follow developments in science and technology, and constantly renew oneself.
P10	Information on project management and business practices such as risk management and change management; awareness of entrepreneurship, innovation and sustainable development.
P04	Ability to develop, select and use modern techniques and tools necessary for engineering practice; Ability to use information technologies effectively.

Assessment			ECTS Allocated Based on Student Workload			
In-Term Studies	Quantity	Percentage	Activities	Quantity	Duration	Total Work Load
Mid-terms	1	%40	Course Duration	0	0	0
Quizzes	0	%0	Hours for off-the-c.r.stud	0	0	0
Assignment	0	%0	Assignments	0	0	0
Attendance	0	%0	Presentation	0	0	0
Practice	0	%0	Mid-terms	0	0	0
Project	0	%0	Practice	0	0	0
Final examination	1	%60	Laboratory	0	0	0
Total		%100	Project	0	0	0
			Final examination	0	0	0
			Total Work Load			0
			ECTS Credit of the Course			0

Course Contribution To Program			
Contribution: 1: Very Slight 2:Slight 3:Moderate 4:Significant 5:Very Significant			
	P01	P02	
All	5	4	



Firat University

FACULTY OF ENGINEERING
ELECTRICAL-ELECTRONICS ENGINEERING

MAT104 Linear Algebra				
Semester	Course Code	Course Name	L+P	Credit
2	MAT104	Linear Algebra	2	2
				4

Language of Instruction:

Turkish

Course Level:

Faculty

Work Placement(s):

No

Department / Program:

ELECTRICAL-ELECTRONICS ENGINEERING

Course Type:

Zorunlu

Goals:

To learn solution methods of linear and nonlinear equations

Teaching Methods and Techniques:

To learn solution methods of linear and nonlinear equations

Prerequisites:

Course Coordinator:

Instructors:

Assistants:

Recommended Sources

Textbook	:	Elementary Linear Algebra, Bernard Kolman and David R. Hill, 7 th Ed. Prentice-Hall, 2002
Resources	:	
Documents	:	Elementary Linear Algebra, Bernard Kolman and David R. Hill, 7 th Ed. Prentice-Hall, 2002
Assignments	:	
Exams	:	

Course Category

Mathematics and Basic Sciences	:	100	Education	:	
Engineering	:		Science	:	
Engineering Design	:		Health	:	
Social Sciences	:		Field	:	

Course Content

Week	Topics	Study Materials	Materials
1	Linear equations		
2	Matrices, Algebraic properties of matrix operations		
3	Echelon form of a matrix		
4	Vectors in the plane and in 3-space		
5	Basis and dimension, Homogeneous systems		
6	Coordinates and isomorphisms		
7	Inner product spaces		
8	Gram-Schmidt process		
9	Linear transformations and matrices		
10			
11	Eigenvalues and Eigenvectors		
12	Real quadric forms		
13	Differential equations		
14	Dynamical systems		

Course Learning Outcomes

No	Learning Outcomes
C01	To Learn the solution of $Ax=B$
C02	To learn nonlinear equations by using phase plane
C03	To define some of the problems which is using Linear Algebra

Program Learning Outcomes

No	Learning Outcome
P08	Ability to work effectively in disciplinary and multi-disciplinary teams.
P02	Ability to define, formulate and solve complex engineering problems; ability to select and apply appropriate modeling and analysis methods for this purpose.
P07	Professional and ethical responsibility
P06	Ability to communicate effectively in Turkish orally and in writing; knowledge of at least one foreign language.
P01	Sufficient knowledge in mathematics, science and electrical and electronic engineering; ability to apply theoretical and applied knowledge in these fields to engineering problems.
P05	Ability to design and conduct experiments, collect data, analyze and interpret results for the study of engineering problems.
P03	Ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, the ability to apply modern design methods
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P10	Information on project management and business practices such as risk management and change management; awareness of entrepreneurship, innovation and sustainable development.
P04	Ability to develop, select and use modern techniques and tools necessary for engineering practice; Ability to use information technologies effectively.

Assessment			ECTS Allocated Based on Student Workload			
In-Term Studies	Quantity	Percentage	Activities	Quantity	Duration	Total Work Load
Mid-terms	0	%40	Course Duration	16	4	64
Quizzes	0	%0	Hours for off-the-c.r.stud	16	4	64
Assignment	0	%0	Assignments	0	0	0
Attendance	0	%0	Presentation	0	0	0
Practice	0	%0	Mid-terms	0	0	0
Project	0	%0	Practice	0	0	0
Final examination	0	%60	Laboratory	0	0	0
Total		%100	Project	0	0	0
			Final examination	0	0	0
			Total Work Load			128
			ECTS Credit of the Course			4

Course Contribution To Program		
Contribution: 1: Very Slight 2:Slight 3:Moderate 4:Significant 5:Very Significant		
	P01	P02
All	5	4



Firat University

FACULTY OF ENGINEERING
ELECTRICAL-ELECTRONICS ENGINEERING

KİM110 Chemistry Lab.					
Semester	Course Code	Course Name	L+P	Credit	ECTS
2	KİM110	Chemistry Lab.	2	1	2

Language of Instruction:

Turkish

Course Level:

Faculty

Work Placement(s):

No

Department / Program:

ELECTRICAL-ELECTRONICS ENGINEERING

Course Type:

Zorunlu

Goals:

Bu ders, kimyada kullanılan temel laboratuvar teknikleri ile ilgili öğrenciye pratik kazandırma amacı taşımaktadır. Bu sebeple öncelikle, laboratuvarında güvenli bir şekilde çalışma kuralları ve meydana gelmesi muhtemel kazalara karşı öğrencilerin yapmaları gereken işlemlerin neler olduğunu öğrencilere verilecektir. Laboratuvarında mevcut malzemeler ve kullanıldığı yerler anlatılacaktır. Ölçme ve tartma işlemleri, çözelti çeşitleri ve bu çözeltileri hazırlama yöntemleri, karışımları saflaştırma yöntemlerinden kristallendirme ve destilasyon ile saflaştırma teknikleri, saf maddelerin erime ve donma noktalarının tayini, titrasyon ile asidik ortamda KMnO_4 din indirgenme reaksiyonunun incelenmesi, bir metalin ısı kapasitesinin basit kalorimetrik yöntemle tayin edilmesi, magnezyum oksidin oluşum entalpisinin tayin edilmesi, donma noktası alçalması yöntemi ile saf bir maddenin molekül ağırlığının tayini, Kristal suyu bulunduran bir maddedeki hidrat suyunun tayini, titrimetric olarak sirkede asetik asit tayin deneyleri öğrencilere yaptırılacaktır.

Teaching Methods and Techniques:

Laboratuvar güvenliği, ve laboratuvar malzemelerinin tanıtımı Laboratuvarında ölçme ve tartma işlemleri Çözelti hazırlama Kristallendirme ile saflaştırma Basit destilasyon ile saflaştırma Erime ve donma noktası tayini İndirgenme yükseltgenme reaksiyonu (KMnO_4 ün asidik ortamda titrasyonu) Gazların difüzyonu VIZE Magnezyumoksidin oluşma entalpsinin tayini Donma noktası alçalması ile molekül ağırlığı tayini Hidrat suyu tayini Anti asit ilaçların titrasyonu veya sirkede asetik asit tayini

Prerequisites:

Course Coordinator:

Instructors:

Assistants:

Recommended Sources

Textbook	:	Genel Kimya Laboratuvar Föyü, ve Bütün Genel Kimya Ders Kitapları
Resources	:	2. Genel Kimya, Temel Kavramlar, Raymond Chang, Çeviri Editörleri, T. Uyar, S. Aksoy, R. İnam, Palme Yayınları.,1. Genel Kimya, 1 ve 2. Cilt, Petr
Documents	:	
Assignments	:	
Exams	:	

Course Category

Mathematics and Basic Sciences	:	20	Education	:	
Engineering	:		Science	:	80
Engineering Design	:		Health	:	
Social Sciences	:		Field	:	

Course Content

Week	Topics	Study Materials	Materials
1	Laboratuvar güvenliği, ve laboratuvar malzemelerinin tanıtımı		
2	Laboratuvarında ölçme ve tartma işlemleriÇözelti hazırlama		
3	Kristallendirme ile saflaştırma		
4	Basit destilasyon ile saflaştırma		
5	Basit destilasyon ile saflaştırma		
6	Erime ve donma noktası tayini		
7	İndirgenme yükseltgenme reaksiyonu (KMnO_4 ün asidik ortamda titrasyonu)		
8	Gazların difüzyonu		
9	Vize İmtihani		
10	Magnezyumoksidin oluşma entalpsinin tayini		
11	Donma noktası alçalması ile molekül ağırlığı tayini		
12	Hidrat suyu tayini		
13	Anti asit ilaçların titrasyonu veya sirkede asetik asit tayini		
14	Telafi Mazeret		

Course Learning Outcomes

No	Learning Outcomes
C01	xxxx

Program Learning Outcomes

No	Learning Outcome
P08	Ability to work effectively in disciplinary and multi-disciplinary teams.
P02	Ability to define, formulate and solve complex engineering problems; ability to select and apply appropriate modeling and analysis methods for this purpose.
P07	Professional and ethical responsibility
P06	Ability to communicate effectively in Turkish orally and in writing; knowledge of at least one foreign language.
P01	Sufficient knowledge in mathematics, science and electrical and electronic engineering; ability to apply theoretical and applied knowledge in these fields to engineering problems.
P05	Ability to design and conduct experiments, collect data, analyze and interpret results for the study of engineering problems.
P03	Ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, the ability to apply modern design methods
P11	Information about the effects of engineering practices on health, environment and safety in universal and social dimensions and the problems of the age; awareness of the legal consequences of er
P09	Awareness of the necessity of lifelong learning; the ability to access information, follow developments in science and technology, and constantly renew oneself.
P10	Information on project management and business practices such as risk management and change management; awareness of entrepreneurship, innovation and sustainable development.
P04	Ability to develop, select and use modern techniques and tools necessary for engineering practice; Ability to use information technologies effectively.

Assessment		
In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	10	%20
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		%100

ECTS Allocated Based on Student Workload			
Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	1	14
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	2	2
Practice	0	0	0
Laboratory	10	2	20
Project	0	0	0
Final examination	1	2	2
Total Work Load			66
ECTS Credit of the Course			2

Course Contribution To Program				
Contribution: 1: Very Slight 2:Slight 3:Moderate 4:Significant 5:Very Significant				
	P01	P02	P05	
All	3	3	5	
C01	3	3	5	



Firat University

FACULTY OF ENGINEERING
ELECTRICAL-ELECTRONICS ENGINEERING

KİM104 Chemistry					
Semester	Course Code	Course Name	L+P	Credit	ECTS
2	KİM104	Chemistry	4	4	4

Language of Instruction:

Turkish

Course Level:

Faculty

Work Placement(s):

No

Department / Program:

ELECTRICAL-ELECTRONICS ENGINEERING

Course Type:

Zorunlu

Goals:

Introduction of basic chemical knowledge about different disciplines of chemistry to the students, development of problem-solving abilities the natural science and technology Knowledge Explorations Area of the general chemistry

Teaching Methods and Techniques:

Significant figures, stoichiometry, chemical formulas and equations, gases and its properties, thermochemistry, atmosphere and hydrogen, solutions and properties of solutions, acids and bases.

Prerequisites:

Course Coordinator:

Instructors:

Prof. Dr. Sinan SAYDAM

Assistants:

Recommended Sources

Textbook	: -Ders kitabı, Petrucci, R.H., Harwood, W.S., General Chemistry, 8th Edition.
Resources	: 2. Tunalı, N.K., Aras, N.K. Kimya Temel Kavramlar, Başarı Yayınları, 13. Basım., 1. Petrucci, R.H., Harwood, W.S., Genel Kimya, Palme Yayıncılık, 8
Documents	: Ders Dökümanları
Assignments	: Ödevler
Exams	: Vize ve Final İmtihanları

Course Category

Mathematics and Basic Sciences	: 20	Education	:
Engineering	: 10	Science	: 70
Engineering Design	:	Health	:
Social Sciences	:	Field	:

Course Content

Week	Topics	Study Materials	Materials
1	Matters and measurements	Konu en az bir kere okunarak gelinmeli	Ders kitabı ve kaynaklar
2	Chemical compounds	Konu en az bir kere okunarak gelinmeli	
3	Chemical reactions	Konu en az bir kere okunarak gelinmeli	
4	Reactions in Aqueous solutions	Konu en az bir kere okunarak gelinmeli	
5	Gases	Konu en az bir kere okunarak gelinmeli	
6	Thermochemistry	Konu en az bir kere okunarak gelinmeli	
8	Atmosphere gases and hydrogen		
9	Solutions and properties		
10	Acids and bases		

Course Learning Outcomes

No	Learning Outcomes
C01	Kimyanın temel kanunlarını, atomun yapısına ait temel konuları bilir
C02	Moleküler yapıya ait özellikleri, moleküllerarası etkileşimleri ve bağ özelliklerini tanımlar
C03	Kimyasal reaksiyon stokimetrisini, enerji, entalpi ve ısı özellikleri hakkında bilgi sahibidir
C04	Maddenin yapısı ve hallerine ait özellikleri, davranışları bilir
C05	Kimyanın temel kanunlarının ve teorilerinin bilir ve kimyasal olayların işleyişini açıklar.
C06	Karşılaştığı olayları, kimyanın temel kanunlarını kullanarak yorumlar.

Program Learning Outcomes

No	Learning Outcome
P08	Ability to work effectively in disciplinary and multi-disciplinary teams.
P02	Ability to define, formulate and solve complex engineering problems; ability to select and apply appropriate modeling and analysis methods for this purpose.
P07	Professional and ethical responsibility
P06	Ability to communicate effectively in Turkish orally and in writing; knowledge of at least one foreign language.
P01	Sufficient knowledge in mathematics, science and electrical and electronic engineering; ability to apply theoretical and applied knowledge in these fields to engineering problems.
P05	Ability to design and conduct experiments, collect data, analyze and interpret results for the study of engineering problems.
P03	Ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, the ability to apply modern design methods
P11	Information about the effects of engineering practices on health, environment and safety in universal and social dimensions and the problems of the age; awareness of the legal consequences of er
P09	Awareness of the necessity of lifelong learning; the ability to access information, follow developments in science and technology, and constantly renew oneself.
P10	Information on project management and business practices such as risk management and change management; awareness of entrepreneurship, innovation and sustainable development.
P04	Ability to develop, select and use modern techniques and tools necessary for engineering practice; Ability to use information technologies effectively.

Assessment			ECTS Allocated Based on Student Workload			
In-Term Studies	Quantity	Percentage	Activities	Quantity	Duration	Total Work Load
Mid-terms	1	%35	Course Duration	14	4	56
Quizzes	0	%0	Hours for off-the-c.r.stud	14	4	56
Assignment	2	%10	Assignments	2	4	8
Attendance	0	%5	Presentation	0	0	0
Practice	0	%0	Mid-terms	1	2	2
Project	0	%0	Practice	0	0	0
Final examination	0	%50	Laboratory	0	0	0
Total		%100	Project	0	0	0
			Final examination	0	0	0
			Total Work Load			122
			ECTS Credit of the Course			4

Course Contribution To Program		
Contribution: 1: Very Slight 2:Slight 3:Moderate 4:Significant 5:Very Significant		
	P01	P02
All	3	3
C01	1	2
C02	2	1
C03	3	2
C04	4	3
C05	5	3
C06	2	4



Firat University

FACULTY OF ENGINEERING
ELECTRICAL-ELECTRONICS ENGINEERING

FİZ118		Physics-2			
Semester	Course Code	Course Name	L+P	Credit	ECTS
2	FİZ118	Physics-2	3	3	5

Language of Instruction:

Turkish

Course Level:

Faculty

Work Placement(s):

No

Department / Program:

ELECTRICAL-ELECTRONICS ENGINEERING

Course Type:

Zorunlu

Goals:

To introduce the fundamental principles and concepts of physics in detail at freshmen level. To show the necessity and importance of physics for other branches of natural sciences and engineering through applications in real life, and industry and technology.

Teaching Methods and Techniques:

Electric Fields; Gauss's Law; Electric Potential; Capacitance and Dielectrics; Current and Resistance; Direct Current Circuits; Magnetic Field; Sources of the Magnetic Field; Faraday's Law; Inductance; Alternating Current Circuits; Electromagnetic Waves

Prerequisites:

Course Coordinator:

Instructors:

Prof. Dr. E.GÜZEL

Assistants:

Recommended Sources

Textbook	:	Serway Physics-5th Edition David Halliday-Robert Resnick, Fundamentals of Physics Frederick J.Keller, W.Edward Gettys, Malcolm J. Skove, Physics
Resources	:	
Documents	:	
Assignments	:	
Exams	:	

Course Category

Mathematics and Basic Sciences	:	20	Education	:	
Engineering	:	30	Science	:	50
Engineering Design	:		Health	:	
Social Sciences	:		Field	:	

Course Content

Week	Topics	Study Materials	Materials
1	Fluid Mechanics; Pressure; Variation of Pressure with depth; Buoyant forces and Archimedes's Principle; fluid dynamics; Str		
2	Electric Fields; Properties of Electric Charges, Charging Objects by Inductions, Coulomb's Law, The Electric Field, Electric Fi		
3	Gauss's Law; Electric Flux, Gauss's Law, Application of Gauss's Law to Various Charge Distributions, Conductors in Electro		
4	Electric Potential; Potential Difference and Electric Potential, Potential Difference in a Uniform Electric Field, Electric Potenti		
5	Capacitance and Dielectrics; Capacitance, Calculating Capacitance, Combinations of Capacitors, Energy Stored in a Charge		
6	Current and Resistance; Electric Current, Resistance, Ohm's Law, A Model for Electrical Conduction, Resistance and Tempe		
7	Direct Current Circuits; Electromotive Force, Resistors in Series and Parallel, Kirchoff's Rules, RC Circuits, Electrical Meters		
8	Magnetic Fields; Magnetic Fields and Forces, Magnetic Force Acting on a Current-Carrying Conductor, Torque on a Current		
9	Midterm		
10	Sources Of the Magnetic Field; The Biot-Savart Law, The Magnetic Forces Between Two Parallel Conductors, Ampere's Law		
11	Faraday's Law; Faraday's Law of Induction, Motional emf, Lenz's Law, Induced emf and Electric Fields, Maxwell's Equations		
12	Inductance; Self-Inductance, RL Circuits, Energy in a Magnetic Field, Mutual Inductance, Oscillations in an LC Circuit		
13	Alternating Current Circuits; AC Sources, Resistors in an AC Circuit, Inductors in an AC Circuit, Capacitors in an AC Circuit,		
14	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Students would have up to date information, software, theoretical and practical knowledge on Physics. Moreover, they will be equipped with knowledge sufficiently to use Physics related resources.
C02	Students would acquire theoretical knowledge on subject of Physics theories.
C03	They could apply the theoretical knowledge gained in the field of Physics
C04	Students would be able to analyze the experimental results.
C05	They would acquire the ability to figure out the physical concepts and issues in the field of Physics through scientific methods and interpret them.

Program Learning Outcomes

No	Learning Outcome
P08	Ability to work effectively in disciplinary and multi-disciplinary teams.
P02	Ability to define, formulate and solve complex engineering problems; ability to select and apply appropriate modeling and analysis methods for this purpose.
P07	Professional and ethical responsibility
P06	Ability to communicate effectively in Turkish orally and in writing; knowledge of at least one foreign language.
P01	Sufficient knowledge in mathematics, science and electrical and electronic engineering; ability to apply theoretical and applied knowledge in these fields to engineering problems.
P05	Ability to design and conduct experiments, collect data, analyze and interpret results for the study of engineering problems.
P03	Ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, the ability to apply modern design methods
P11	Information about the effects of engineering practices on health, environment and safety in universal and social dimensions and the problems of the age; awareness of the legal consequences of er
P09	Awareness of the necessity of lifelong learning; the ability to access information, follow developments in science and technology, and constantly renew oneself.
P10	Information on project management and business practices such as risk management and change management; awareness of entrepreneurship, innovation and sustainable development.
P04	Ability to develop, select and use modern techniques and tools necessary for engineering practice; Ability to use information technologies effectively.

Assessment			ECTS Allocated Based on Student Workload			
In-Term Studies	Quantity	Percentage	Activities	Quantity	Duration	Total Work Load
Mid-terms	1	%40	Course Duration	14	3	42
Quizzes	0	%0	Hours for off-the-c.r.stud	14	4	56
Assignment	0	%0	Assignments	5	4	20
Attendance	0	%0	Presentation	0	0	0
Practice	0	%0	Mid-terms	1	8	8
Project	0	%0	Practice	0	0	0
Final examination	1	%60	Laboratory	0	0	0
Total		%100	Project	0	0	0
			Final examination	1	10	10
			Total Work Load			136
			ECTS Credit of the Course			5

Course Contribution To Program		
Contribution: 1: Very Slight 2:Slight 3:Moderate 4:Significant 5:Very Significant		
	P01	P02
All	5	4



Firat University

FACULTY OF ENGINEERING
ELECTRICAL-ELECTRONICS ENGINEERING

FİZ106 Physics Lab.-2					
Semester	Course Code	Course Name	L+P	Credit	ECTS
2	FİZ106	Physics Lab.-2	2	1	2

Language of Instruction:

Turkish

Course Level:

Faculty

Work Placement(s):

No

Department / Program:

ELECTRICAL-ELECTRONICS ENGINEERING

Course Type:

Zorunlu

Goals:

To show the applications of known as theoretical in mechanical physics and to compare experimental and theoretical data

Teaching Methods and Techniques:

Length measurements, error analysis, one and two dimensional motion, vibration, motion, collisions, conservation laws.

Prerequisites:**Course Coordinator:****Instructors:****Assistants:****Recommended Sources**

Textbook	:	Fiz. 156 Test Sheet
Resources	:	
Documents	:	
Assignments	:	
Exams	:	

Course Category

Mathematics and Basic Sciences	:	100	Education	:	
Engineering	:		Science	:	
Engineering Design	:		Health	:	
Social Sciences	:		Field	:	

Course Content

Week	Topics	Study Materials	Materials
1	Introduction of Laboratory Equipment		
2	Physical Measurements and Error Accounts		
3	Speed and acceleration		
4	Projectile motion		
5	Newton's laws of motion- Motion on an inclined plane		
6	Elastic collision		
7	Completely inelastic collision		
8	Midterm exam		
9	Simple Harmonic Motion		
10	Conservation of Energy		
11	Simple Pendulum		
12	Measurement of the acceleration of gravity		
13	Damped Harmonic Motion		
14	Final Exam.		

Course Learning Outcomes

No	Learning Outcomes
C01	Understanding the Mechanics of Physics as Visual

Program Learning Outcomes

No	Learning Outcome
P08	Ability to work effectively in disciplinary and multi-disciplinary teams.
P02	Ability to define, formulate and solve complex engineering problems; ability to select and apply appropriate modeling and analysis methods for this purpose.
P07	Professional and ethical responsibility
P06	Ability to communicate effectively in Turkish orally and in writing; knowledge of at least one foreign language.
P01	Sufficient knowledge in mathematics, science and electrical and electronic engineering; ability to apply theoretical and applied knowledge in these fields to engineering problems.
P05	Ability to design and conduct experiments, collect data, analyze and interpret results for the study of engineering problems.
P03	Ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, the ability to apply modern design methods
P11	Information about the effects of engineering practices on health, environment and safety in universal and social dimensions and the problems of the age; awareness of the legal consequences of er
P09	Awareness of the necessity of lifelong learning; the ability to access information, follow developments in science and technology, and constantly renew oneself.
P10	Information on project management and business practices such as risk management and change management; awareness of entrepreneurship, innovation and sustainable development.
P04	Ability to develop, select and use modern techniques and tools necessary for engineering practice; Ability to use information technologies effectively.

Assessment			ECTS Allocated Based on Student Workload			
In-Term Studies	Quantity	Percentage	Activities	Quantity	Duration	Total Work Load
Mid-terms	1	%40	Course Duration	0	0	0
Quizzes	0	%0	Hours for off-the-c.r.stud	0	0	0
Assignment	0	%0	Assignments	0	0	0
Attendance	0	%0	Presentation	0	0	0
Practice	0	%0	Mid-terms	1	10	10
Project	0	%0	Practice	14	2	28
Final examination	1	%40	Laboratory	0	0	0
Total		%80	Project	0	0	0
			Final examination	1	12	12
			Total Work Load			50
			ECTS Credit of the Course			2

Course Contribution To Program				
Contribution: 1: Very Slight 2:Slight 3:Moderate 4:Significant 5:Very Significant				
	P01	P02	P05	
All	4	3	5	
C01	4	3	5	



Firat University

FACULTY OF ENGINEERING
ELECTRICAL-ELECTRONICS ENGINEERING

EEM102 Fundamentals of EEE-2					
Semester	Course Code	Course Name	L+P	Credit	ECTS
2	EEM102	Fundamentals of EEE-2	2	2	5

Language of Instruction:

Turkish

Course Level:

Faculty

Work Placement(s):

No

Department / Program:

ELECTRICAL-ELECTRONICS ENGINEERING

Course Type:

Zorunlu

Goals:

Teaching information relating to AC systems and AC circuits, rectification of AC. To examine the behavior of RLC elements. To teach average and effective value. Solving single-source circuits by which phasor diagrams, complex number and power triangle method. To teach power compensation and resonance circuits. Teaching information relating to three-phase systems.

Teaching Methods and Techniques:

Prerequisites:

Course Coordinator:

Instructors:

Prof. Dr. Yakup DEMİR

Assistants:

Recommended Sources	
Textbook	: Electrotechnique-2 lecture notes, Prof. Dr. Şevki HOŞAĞASI
Resources	: Elektrik Devreleri, Sanem Serisi, Çeviren: Murat AŞKAR ve Sevig AYTER, Güven Kitabevi, 1980., Alternatif Akım Devreleri ve Problem Çözümleri, Mus
Documents	:
Assignments	:
Exams	:

Course Category			
Mathematics and Basic Sciences	: 40	Education	:
Engineering	: 60	Science	:
Engineering Design	:	Health	:
Social Sciences	:	Field	:

Course Content			
Week	Topics	Study Materials	Materials
1	Why is alternative current (AC) and production of AC.		
2	The sizes that define our AC network.		
3	Rectification of AC.		
4	Average and effective value.		
5	The concept of phasor. AC behaviours of RLC elements.		
6	AC circuits solution by graphically and trigonometric methods.		
7	AC circuits solution by phasor diagrams.		
8	AC behaviours of the circuit comprising the RLC elements.		
9	Circuit solution by complex number.		
10	Serial and parallel resonance circuits.		
11	Power and power compensation in AC circuits.		
12	Circuit solution by power triangle method.		
13	Three-phase system and load.		
14	Power in three phase systems.		

Course Learning Outcomes	
No	Learning Outcomes
C01	Application ability of mathematics, science and engineering knowledge
C02	Describing, modelling, formulating and solving ability of engineering problems

Program Learning Outcomes	
No	Learning Outcome
P08	Ability to work effectively in disciplinary and multi-disciplinary teams.
P02	Ability to define, formulate and solve complex engineering problems; ability to select and apply appropriate modeling and analysis methods for this purpose.
P07	Professional and ethical responsibility
P06	Ability to communicate effectively in Turkish orally and in writing; knowledge of at least one foreign language.
P01	Sufficient knowledge in mathematics, science and electrical and electronic engineering; ability to apply theoretical and applied knowledge in these fields to engineering problems.
P05	Ability to design and conduct experiments, collect data, analyze and interpret results for the study of engineering problems.
P03	Ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, the ability to apply modern design methods.
P11	Information about the effects of engineering practices on health, environment and safety in universal and social dimensions and the problems of the age; awareness of the legal consequences of er
P09	Awareness of the necessity of lifelong learning; the ability to access information, follow developments in science and technology, and constantly renew oneself.
P10	Information on project management and business practices such as risk management and change management; awareness of entrepreneurship, innovation and sustainable development.
P04	Ability to develop, select and use modern techniques and tools necessary for engineering practice; Ability to use information technologies effectively.

Assessment			ECTS Allocated Based on Student Workload			
In-Term Studies	Quantity	Percentage	Activities	Quantity	Duration	Total Work Load
Mid-terms	2	%30	Course Duration	14	2	28
Quizzes	6	%20	Hours for off-the-c.r.stud	14	5	70
Assignment	3	%15	Assignments	8	4	32
Attendance	1	%5	Presentation	0	0	0
Practice	0	%0	Mid-terms	2	2	4
Project	0	%0	Practice	0	0	0
Final examination	1	%30	Laboratory	0	0	0
Total		%100	Project	0	0	0
			Final examination	1	2	2
			Total Work Load			136
			ECTS Credit of the Course			5

Course Contribution To Program			
Contribution: 1: Very Slight 2:Slight 3:Moderate 4:Significant 5:Very Significant			
	P01	P02	
All	3	3	
C01	3		
C02		3	