



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		<ol style="list-style-type: none"> 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:



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		<ul style="list-style-type: none"> Learn what software development is and what software developers do. Learn programming concepts and terminology to facilitate communication 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: <ul style="list-style-type: none"> 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	typedef
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-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		
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		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, <i>Elementary Linear Algebra</i> , Prentice Hall, 8 th edition, 2004.					
Other reference books		1) D. C Lay, <i>Linear Algebra and Its Applications</i> , Addison Wesley Longman, Inc., 2n edition 1997. 2) D. Poole, <i>Linear Algebra - a Modern Introduction</i> , 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: 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		
Midterm		Type	Number	%	Activity Type	Number	%
		Midterm	1	30	Quiz		
		Quiz	2	10	Lab performance		
		Homework	4	10	Report		
		Project			Oral exam		
Final		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:



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		<ol style="list-style-type: none"> 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		<ul style="list-style-type: none"> - 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:



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		
Midterm		Type	Number	%	Activity Type	Number	%
		Midterm	1	30	Quiz		
		Quiz	3	30	Lab performance		
		Homework			Report		
		Project			Oral exam		
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, voltage, power, energy definitions. Sources, resistor, Ohm's law. Kirchoff Laws.
2	Basic resistor circuits, series and parallel 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: 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		
Midterm		Type	Number	%	Activity Type	Number	%
		Midterm	1	50	Quiz		
		Quiz			Lab performance		
		Homework			Report		
		Project			Oral exam		
Final			1	50			
Makeup exam (Oral/Written)		Written					
Prerequisites		Calculus I					
Brief content of the course		<p>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</p>					
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: 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		
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 sinusoidally driven circuits, using Laplace transform in circuit analysis. Also, students learn frequency response and filters. These subjects prepare a background for other subjects 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., 8 th Ed. 2008.					
Other reference books		1) Hayt, W.H., Jack E. Kemmerly, Steven M. Durbin, Engineering Circuit Analysis, Mc Graw Hill, 6 th Ed. 2002 2) Richard C. Dorf, James A. Svoboda Introduction to Electric Circuits, Wiley, 7 th 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: 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 systems. 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, 2 nd edition.					
Other reference books		S. Haykin and B. Van Veen, Signals and Systems, John Wiley & Sons, Inc., 2003, 2 nd 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: 151224555

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: 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		
Final					Other (.....)		
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		<ol style="list-style-type: none"> 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		<ul style="list-style-type: none"> - 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: 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	
Midterm	Type	Number	%	Activity Type	Number	%
	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, 3 rd 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



COURSE INFORMATION FORM

SEMESTER	Fall
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COURSE CODE	151225393	COURSE NAME	INTRODUCTION TO MICROCOMPUTERS
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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	

ASSESSMENT CRITERIA			
EXAM NAME		EVALUATION TYPE	%
IN TERM EXAMS	1 st Mid Term	WRITTEN	30
	2 nd 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 8085 Ramesh S. Goankar, Prentice Hall Publishing Company, 2002
OTHER REFERENCES	Microprocessor/Hardware Interfacing and Applications Barry 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
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Prof.Dr.SALİH FADIL		12/12/2012
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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: 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		
Midterm	Type	Number	%	Activity Type	Number	%
	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:



COURSE INFORMATION FORM

SEMESTER	Spring
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COURSE CODE	151226363	COURSE NAME	FUNDAMENTALS OF CONTROL SYS.
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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	

ASSESSMENT CRITERIA			
EXAM NAME		EVALUATION TYPE	%
IN TERM EXAMS	1 st Mid Term	WRITTEN	25
	2 nd 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 response, 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

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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, <i>Fundamentals of Control Systems</i> , 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; <ol style="list-style-type: none"> 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: 151225399/151245399 **COURSE TITLE:** Engineering Mechanics

Semester	Weekly Hours		COURSE				
	Theoretical	Practical	Credits	ECTS	Type	Language	
3	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	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: 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		
Midterm		Type	Number	%	Activity Type	Number	%
		Midterm	1	30	Quiz		
		Quiz	2	20	Lab performance		
		Homework	4	10	Report		
		Project			Oral exam		
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, 7 th Ed. OUP, 2016. (Older editions are also welcome)					
Other reference books		R. Jaeger and T. Blalock, Microelectronic Circuit Design, 3 rd Ed. McGraw-Hill, 2006. D. Neamen, Microelectronics Circuit Analysis and Design, 4 th 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: 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: 151225400

COURSE TITLE: Introduction to Financial Markets

Semester	Weekly Hours		COURSE			
	Theoretical	Practical	Credits	ECTS	Type	Language
Fall	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	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 financial 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: 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 informations 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 goûts.
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: 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		
		Type	Number	%	Activity Type	Number	%
Midterm		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: 151227639

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		
		Type	Number	%	Activity Type	Number	%
Midterm		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. Histan					
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	Approaches 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 acquisition and 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 control 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: 151226378 COURSE TITLE: CREATIVE PROBLEM SOLVING
TECHNIQUES**

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		
0		()		0	X		
Assessment		THEORETICAL-PRACTICAL COURSES			LABORATORY COURSES		
		Type	Number	%	Activity Type	Number	%
Midterm		Midterm		30	Quiz		
		Quiz			Lab performance		
		Homework		20	Report		
		Project			Oral exam		
		Other (.....)			Other (.....)		
Final				50			
Makeup exam (Oral/Written)							
Prerequisites		None					
Brief content of the course		Innovation and creativity; Creative problem solving process; Creative techniques for analyzing the environment, recognizing, defining and making assumptions; Group techniques for producing options; Creative techniques for selecting, implementing and controlling options; Using creative techniques.					
Objectives of the course		To provide creative problem solving skills to engineering students					
Contribution of the course towards professional education		To ensure that engineering students develop a systematic approach to all kinds of problems and solutions to be encountered in their professional lives and improve their problem solving performance; To learn the understanding of in-house learning sprawl					
Outcomes of the course		1- Students define and explain the problem; 2- Divide the problem into pieces; 3. identify the objectives of the solution of the problem; 4. Analyze root cause; 5. Develops measures to solve the problem; 6- Implement the measures; 7 - confirm the results; 8- Standardize the solution and ensure that the learning is shared. 9- Different techniques throughout the process is learned.					
Textbook of the course		Higgins, James M. (1994), 101 Creative Problem Solving Techniques, New Management Publishing Company, USA					
Other reference books		Proctor, Tony (2014); Creative Problem Solving for Managers, Routledge, UK Altshuller, Genruch (2013), Ve Birden Mucit Ortaya Çıkarıldı - Yaratıcı Problem Çözme Teorisi, Elma Yayınevi					
Required material for the course		Computer, projection device, presentation software, white board					

WEEKLY PLAN OF THE COURSE	
Week	Topics
1	Innovation and creativity
2	Creative problem solving process
3	Creative problem solving process
4	Creative techniques for analyzing the environment, recognizing & identifying problems, and making assumptions
5	Creative techniques for analyzing the environment, recognizing & identifying problems, and making assumptions
6	Case study
7	Case study
8	Mid-Term Examination
9	Mid-Term Examination
10	Group techniques for generating alternatives
11	Creative techniques for choosing among the alternatives, implementation, and control
12	Using creative techniques
13	Case study
14	Case study
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.				
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:

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

Name of Instructor(s): Gürcan Banger

Signature(s):

Date: Dec. 14th, 2016



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. Fitzgerald, 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: